Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XIII, No. 10 AUGUST, 1937 $2.00 a Year

Contents of this Issue

Letters from Readers of Industrial Finishing 7
The Batch Spraying of Small Parts 12
Finishing and Decorating Cabinet-Type Lubricators 17
New Furniture Styles, Finishes, Colors and Woods 20
Finishing Vanity Cases 26
Degreasing Metal by Solvent and Its Vapor 31
Tests That Fool You and Tests That Are Really Practical (Part II) 43
Questions; Answers 50
What's New 60
Editorial 73

New Blue Pigment 16
Titanium Pigments Book 16
Represents Southern Lacquer Co. 16
Waterproofing Fabrics 19
First Aid for Burns 19
Detroit Rex Products to Build New Factory 25
Marietta Builds Laboratory 25
Spray-Painting Instruction 38
Monastral Fast Blue 38
What Bakelite Is 38
Paint Measuring Meters 48
Joins Designers for Industry 48
North Bergen Varnish Corp. Opens Executive Offices in N. Y. C. 48
Chrome Stripes Decorative 58
Neville Co. Appoints New York Sales Representatives 58
Particle Size Analyzer 58
Automatic Spraying 67
Up-Keep Painting 69
Dull Rubbed Varnish Finish on Furniture 71
Quick Facts About Modern Woods 75

"Classified Advertising" Section 77
Advertisers' Index 79

Published by

Practical Publications, Inc., 222 East Ohio St., Indianapolis, Indiana

Eastern Office: C. A. Larson, Mgr., 254 West 31st Street, New York City; Phone, Penna. 6-9049

Metalized
PRIMER-SURFACER No. 4776-A
for the foundation of the finish

Primes and Surfaces in one operation on
METAL—WOOD—COMPOSITIONS

Covers—fills—dries fast. Sands in ten minutes. Topcoat immediately after sanding.
Leafing action of metalic ingredients insures covering, hiding and filling properties.
Excellent base for oil enamels, air dry or bake, lacquer enamels or synthetics.
Perfect adhesion and flexibility on all metals.

LACQUERS
THINNERS
ENAMELS
METALIZED FINISHES
SYNTHETICS

UNITED LACQUER MFG. CORP.
General Offices: 67 West 44th Street, New York, N. Y.
Factory: Linden, N. J.

SURPRISING EFFECTS

are obtained with a flock finish on countless products of every description.

COTTON-WOOL-RAYON FLOCKS

of proper grade applied by spray gun lend novelty and character to articles of paper, wood, metal and fabric—resulting in lower cost and stimulation of sales.

Write to the country's leading makers for sample prices.

● ● ● ●

CLAREMONT WASTE MFG. CO.
CLAREMONT, N. H.
The country's leading makers

Letters from Readers

OF INDUSTRIAL FINISHING

Editor's Note—These letters have been promptly answered and all of the inquiries have been referred to advertisers in the magazine. They are published here to indicate or suggest certain interesting trends of thought and activity in the industry, and to encourage further inquiries, comments and suggestions. The names and addresses of firms or individuals whose letters are published here may be had by writing to this office, or letters sent to them in care of this office will be forwarded at once.

Thickness Gauge

In the June issue, in an article starting on page 25, entitled "Venetian Blind Finishing," I noticed the mention of a Pfund gauge for measuring the film thickness of paint application while the paint is still wet. Will you please advise me where I can procure one of these gauges and, if possible, give me some idea of the approximate cost of same?—Q. & T. Co.

Paint Spreader

Please forward name and address of manufacturer of Paint Spreader, as outlined on page 19 of the February 1935 issue of INDUSTRIAL FINISHING.—S. G. Corp. (Cellulose and Resin Products).

The paint spreader you inquire about is a "Parks Rapid Coater" (chiefly for laboratory use) made by Parks Equipment Co., Philadelphia, Pa.—Ed.

Metallic Finish

I would like to know if there is a lacquer paint that looks metallic and luminous after it's sprayed. I would like to have colors in gold and silver. I have trouble when trying to fix a spot on a plated finish; powder colors don't seem to do the trick. I want to know if there is something that would match a plated finish. Also, is there a lacquer enamel that doesn't chip or peel?—M. M. (Foreman in a spraying department).

Blind Slat Gloves

An inquiry has been received from a very important customer of ours for the name of a manufacturer who can furnish gloves with either clips or pins for handling painted Venetian blind slats, so as not to mar the slats as finger marks would do. Your assistance in securing the name of such a manufacturer will be very much appreciated.—F. T. & Co. (Mfrs. Service Dept.)

Oxoseal Co. Ltd. Makes Oxoseal

Editor's Note: As a result of the inquiry, "Who Makes 'Oxoseal'", published in May issue, page 11, we have received a letter and a very interesting catalog about Rustproofing Oxoseal from the Oxoseal Co., Ltd., in Canada.

Excerpts from the catalog disclose the following information:

"The Oxoseal process is an electro-deposition of alloy metal penetrating the surface porosity of the part treated. A uniform deposit forms a perfect bond without affecting temper or strength of the treated materials, and there is no distortion. Oxoseal, properly applied, does not peel or scale and is not affected by bending or twisting. Ma-

GRAND RAPIDS WOOD FINISHING COMPANY
QUALITY FINISHING MATERIALS
GRAND RAPIDS MICHIGAN

CHARACTER in FURNITURE FINISH

Is that undefinable, illusive something that hallmarks better finished furniture with a higher degree of appeal.

CHARACTER FINISHED FURNITURE radiates distinctive individuality—uniqueness in charm. Inspires lasting pride of possession.

THIS UNIQUE CHARM—INDIVIDUALITY—CHARACTER IN FURNITURE FINISH IS ATTAINABLE WITH OUR CHARACTER BUILT-IN PRODUCTS and simple working instructions — with materials formulated to meet most rigid requirements of exacting furniture craftmasters.

The present day demand for better finished furniture is greater than ever before. We are prepared to help you fulfill that demand. Let our Finishing Laboratory assist you in solving your finishing problems.

GRAND RAPIDS WOOD FINISHING COMPANY
GRAND RAPIDS, MICHIGAN

terials are treated at room temperatures without distortion, and the deposit is not affected by temperatures up to 600°F.

"There is very slight increase in the dimension of the materials treated. No reconditioning is necessary. Threaded parts are fully protected. Its smooth finish permits firm connection of bolted or riveted parts.

"Oxoseal alloy is a greater resister of corrosion than a base metal deposit. It gives greater protection and longer life. The conductivity of treated parts is unaffected. On reciprocating parts the anti-friction qualities are increased.

"Appearance is pleasing, similar to silver, and can be polished to high luster. Lacquers readily adhere to Oxoseal surfaces. Chrome may be plated over Oxoseal deposit, preventing peeling and scaling of the chrome. Rolled or cast steel, forgings, cast iron, or ferrous alloys are protected by the process; also copper and bronze can be treated, preventing verdigris which readily forms on exposed copper and bronze. Oxoseal is easily and quickly applied, either in still or continuous treating tanks, or plating barrel. The treated suface is easily soldered. When welded, there are no injurious fumes. Conclusive tests of durability have been established."

Water-Proofing Canvas

From time to time I have noticed different kinds of formulas in your publication. I am wondering if you could conveniently send me a formula for water-proofing canvas.

Yes, I am going camping and I want to be sure that my tent does not leak. Your help will be greatly appreciated.—A. R. T.

Reflecting Paint; Fast Color Dye

On page 76 of the March issue you mention that there are several manufacturers of reflecting paint. Will you kindly send us their names?

We have to obtain comparatively small lots of imitation suede in a range of colors and hope to do this by dyeing white suede. These colors must be fast. We will appreciate any information you can give us regarding where to obtain a fast color dye, or coloring which can be used on white cotton and rayon flock after it has been converted into imitation suede.—M. D. Co. (Trimmings for Many Products).

NEW RUB-LESS LACQUER

An accomplishment worthy of trial. By eliminating the least expensive solvent used in making all regular lacquers, and replacing it with a superior and more costly one — we have produced the new RUB-LESS Lacquer.

Because it **positively** does flow out more smoothly and dry without microscopic "hills and valleys," it can be rubbed with less than half the regular effort and at the same time leave approximately fifty percent more lacquer on the surface after being rubbed.

RUB-LESS Lacquer is transparent, tough, heavy-bodied, licensed and resistant to alcohol, as well as unusually check-proof.

Order five gallons at drum price and if not all we claim for it, return at our expense.

V. J. DOLAN & COMPANY, Inc.

MANUFACTURERS

"Unquestionable Quality" Wood Finishing Products

1830-32 NORTH LARAMIE AVENUE CHICAGO, ILLINOIS

"I think you've got something there, pal"

Send us samples to finish.

WE KNOW we have *something* in the "Speedip" Whirl Enameler

and we know it will save money for you manufacturers of parts or small articles. Do this today—and without any obligation on your part. Mail us some items of your make and we'll finish and return them for your rigid examination. You can't lose on such a demonstration and you may "win" thousands of dollars.

RONCI MACHINE CO.

45 River Avenue, Providence, R. I.

...BEST FOR THE DAY'S LOAD!

True, you want cleaning that is thorough . . . low in cost. But you want something more . . . something grounded in experience . . . proved by performance. You want DEPENDABILITY . . . cleaning that will give you consistently satisfactory results today, tomorrow and every other day.

That's why Oakite cleaning is so often referred to as "sure-footed" cleaning. YOU CAN RELY ON IT!

Are you up against any problem in cleaning before plating? Want to reduce wiping and brushing operations? Are you able to remove japan, enamel or lacquer as economically as you would like to?

These are the jobs on which "sure-footed" Oakite cleaning points the way to improved product . . . to low costs. Write for specific information on your work.

Manufactured by

OAKITE PRODUCTS, INC.
32F Thames St., NEW YORK, N. Y.

Branch Offices and Representatives in All Principal Cities of the U. S.

OAKITE

"Chrome Coat"

We are anxious to obtain a refinishing material known as "Chrome Coat", or something similar, for refinishing automobile bumpers and other nickelplated parts on the car, and we would appreciate your advising us where we can obtain some of this material which will finish up as near a chromium finish as possible.

We have been using the ..... DE-45 silver finish, which is more satisfactory than anything we have been able to locate, but if we can get anything better than this we would like to have it.—B. C. E. & Co. (Wholesale Hardware).

Live Wire Foreman

I am foreman of a large tumbling room, and find it necessary to read your interesting magazine INDUSTRIAL FINISHING. It would be well appreciated if you would send me the magazine monthly. Expecting you to let me know the monthly subscription as soon as possible, I will then forward it to you.

Kindly send me the name and address of B. & Q. Co. (Rubber Products) as mentioned in May issue, page 36.—S. A. C.

Burning-in Irons

Kindly inform us where we may obtain electric burning-in irons for work on wooden furniture.—J. J. Co. (Creators of Styled Furniture).

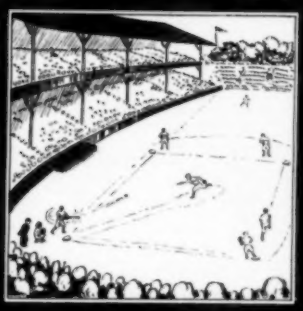
Finish for Wrought-Iron Furniture

We are seeking a more perfect finish or rather a more rust-proof primer for our outdoor wrought-iron garden furniture. Our product is the better type of furniture which we are distributing extensively throughout the country.

We have been using red lead primers. We have also tried as a primer brown iron-oxide paint, but the results are not as satisfactory as we would like. It occurs to us that you may be in position to put us in touch with some finishing expert, house or manufacturer whose product might be an improvement upon what we have been using.

We would appreciate very much any assistance you may give us, and as the outdoor season is advanced and we would be willing to change

HIT and RUN



Several well-known lines that made a big **HIT** at the show are being finished with

Stille-Young

Sealers Varnishes
Stains Lacquers
Fillers Enamels

and are in for a real **RUN** throughout the Fall Season.

THE STILLE-YOUNG CORPORATION
MANUFACTURERS
Chicago, Illinois
High Point, North Carolina

our processes at once did we find something better, may we ask you to give our request your prompt attention?—L. F. N. Co. (Wrought Iron and Bronze Works).

Butt-Walnut Printed Panel Stock

We are wondering whether you know the names of one or more manufacturers of panel stock that has been given a butt-walnut printed finish. We wish to communicate with such panel companies, as we are in the market for a quantity of same to complete a certain radio cabinet contract. We would also appreciate your sending us names of one or more manufacturers of such printing equipment.—O. D. Co.

Golden Oak

It is with a great deal of pleasure that I read your magazine, particularly your column on questions and answers. I would like to have your column give me a good finish for golden oak on school chairs. I want to know exactly the type of stain, filler, sealer, etc., and the names of manufacturers making them?—B. E. M.

Decorative Finishes

We have an inquiry from our subsidiary in Australia, regarding the following articles appearing in the January 1937 issue of INDUSTRIAL FINISHING:

Multiform Finish ..... page 41
Crystallizing Lacquer ..... page 42
Modern Crystal Lacquer..... page 42
Hammered Metal Effect Finish ..... page 42
Plush Rayon Izarine..... page 45

We would appreciate your sending us the issue of INDUSTRIAL FINISHING in which the above articles appeared, together with any more detailed information regarding these processes which may be available. In this regard, we are particularly interested in complete application instructions. Because of the Australian Customs regulations, we

(Continued on page 76)

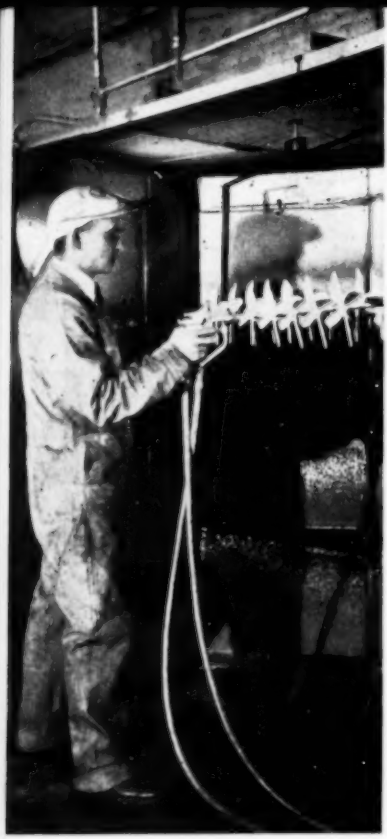


Fig. 1 (left)—Spraying fan blades in multiple. Each fan is supported by prongs projecting outward from both sides of a horizontal bar which hangs from an inverted U-rod pivoted to the ceiling of booth. Potential production 2,000 per hour.

Fig. 2 (right)—Fan guards are handled in multiple. While a rod is being loaded or unloaded, one end of it is temporarily inserted into a short pipe attached to the portable rack. A rod full of fan guards is sprayed at one time. Production is 3,000 per hour.

Photographs supplied by courtesy of Made Rite Corp., Cleveland, Ohio

The Batch

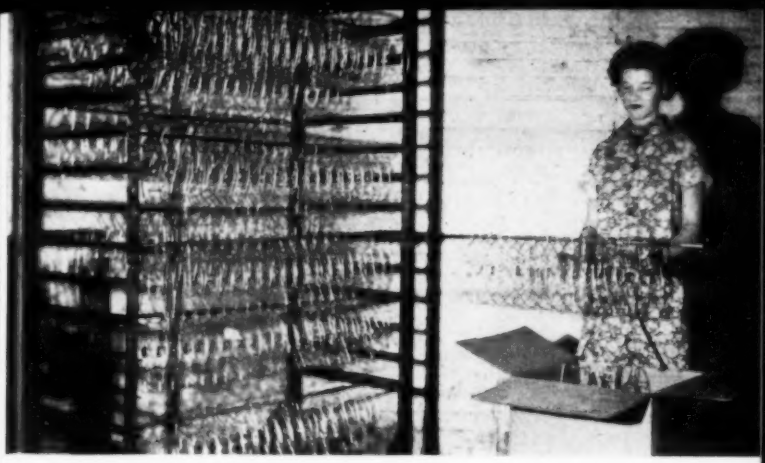
by James A. Bede

Foreman Finisher

IT IS A common practice for production managers and paint foremen to expend a great deal of time and effort to test many samples of paints, hoping to reduce the labor cost or increase production by some small fraction; and they are well pleased if their efforts lead to some small measure of success. Selection of the right finish is of utmost importance, but often overlooked is a far greater potential source of improvement, namely, *the method and routine of handling the parts to be finished.*

Large corporations in the major industries have worked out their schedules of operations after careful planning, based on exhaustive tests, and almost invariably the conveyor system is the backbone of their setup, for theirs is the problem of large scale production of a single item. On the other hand there is a vast army of manufacturers for whom the conveyor system is unwieldy, either because of insufficient volume or because of too great a variety of parts to be finished.

An example of the latter class is the Made-Rite Corporation, Cleveland, Ohio, manufacturers of electrical appliances such as toasters, fans and mixers. An astonishing increase of production was effected in the paint de-



Spraying of Small Parts

An experienced metal finisher submits some valuable suggestions about the spraying and handling of small parts in batches and in multiple to increase production and reduce the cost of finishing.

partment of this plant by changing the method of handling parts to be sprayed from the conventional to a group system, whereby *many parts are sprayed at a time instead of singly.*

One sprayer's output of toaster parts, for example, was stepped up from 50 to 1,200 per hour. The main unit of a mixer formerly sprayed at a rate of 32 per hour is now handled at a rate of 400 per hour. Cast-iron fan bases, sprayed with a wrinkle fnish in the conventional way at the rate of 100 per hour, can be sprayed now by one man at the rate of 2,400 per hour. This increase of production was further enhanced by a saving in paint ranging from 25% to 40%, and sometimes even more. This system of batch spraying is applicable where the parts do not range much over 1-sq.ft. in area — for, obviously, large units must be handled individually. Furthermore, extremely small items such as shoe eyelets are a separate problem.

Easier and Quicker to Handle Work on Rods and Trays

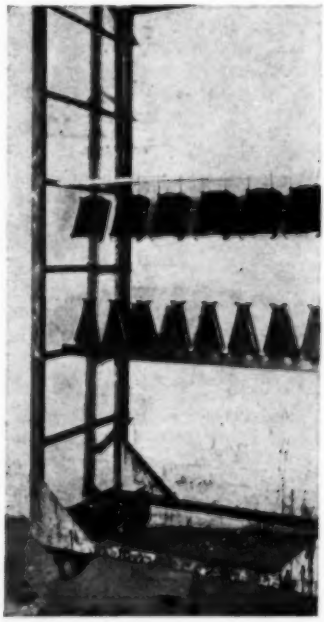
There are innumerable ways of racking up parts to enable them to be sprayed in groups, but most of them come under any one of these three different classifications: 1) placing them on a tray; 2) holding them by a rigid prong or clamp; 3) suspending them by hooks from a rod. Practically any article can be handled effectively

by one of these methods. The most important complication is encountered when certain areas are to be shielded.

Articles to be sprayed on one side are usually placed on a tray, while those to be sprayed on both sides are generally (but not always) best handled by a rigid prong or by a suspended-hook arrangement. However, considerable ingenuity is sometimes required to select and devise the most efficient method of handling some pieces.

There are certain factors to be considered in selecting the size of tray or rod to be used; and, if trucks are to be employed, they should be designed to accommodate the trays or rods. For normal work, except lacquering, the ideal size of tray is 24x40-in., made of 24-gauge steel. Forty inches is also an ideal length for the rods because then the sprayer can take strokes the full length of his arm. For lacquer spraying the tray and rod should be reduced to about 30-in. in length, due to the fact that it is harder to keep a large surface "wet" when lacquer is used.

Fig. 3—Here are shown two methods of handling electric toaster parts, namely hanging them on a rod and placing them on a tray. Production is 1,000 per hour.



Trays loaded with parts to be sprayed should be placed on a turntable which is at the height of the sprayer's waistline. Where articles are hung on horizontal rods, the rods can be supported by an inverted U-rod or bar pivoted to the ceiling of the spray booth, as shown in Fig. 1. Both methods of handling the work can be accommodated in the same spray booth. The turntables can be removed when the swiveled U-bar is used. A further improvement is to enlarge the spray booth to accommodate two sets of turntables and overhead swivels. A spry young man can then assist the sprayer by taking away the painted tray or loaded rod and replacing it with another unpainted load while the sprayer is spraying the adjoining load.

By this method the spraying operation can be maintained continuously. With long sweeping strokes the sprayer paints many pieces at a time, with the added advantage that the bulk of overspray is not lost but strikes the adjoining parts. In this way it is possible to obtain a uniform high quality of work—perhaps higher in quality and certainly more uni-

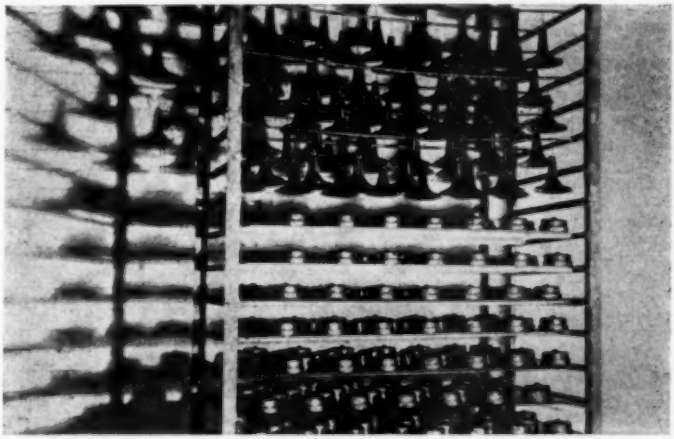


Fig. 4—Painted fan bases and motor cases in portable rack. Bases are hooked to horizontal rods; motor cases rest on trays. Production on bases is 2400 per hour.

form than in the conventional piece-by-piece method of handling parts.

However, the sprayer will have to adapt himself to the altered problems encountered. He may have to vary the viscosity of the paints, and change to a different air cap and needle than formerly used. These and other factors are worked out by the efficient paint foreman to obtain the proper balance.

Batch System Offers Many Advantages

A great advantage of the "batch system" is its flexibility. It permits all operations in the paint department to be sub-divided to facilitate a constant movement of parts.

It is the contention of many production men that the conveyor system's greatest asset is not only that it brings the work and takes it away, but that it enables all operations to be broken up piecemeal. It has often been observed that two men working together in proper unison, without duplicating each others efforts, can do three times as much work as one man doing the entire operation alone. This same principle can be readily applied to the "batch system," with the further advantage of flexibility; a tie-up or temporary cessation of one operation does not neessarily affect all the others. Members of the paint crew can be assigned definite fixed operations covering the cleaning, racking, spraying, inspecting and packing of the painted parts.

Racking and unloading of small parts appears to be more rapidly performed by nimble-fingered women than men. If it is desirable, these operations can be done outside the paint department, the trucks being wheeled in and out as needed. It is especially desirable to unload the painted

parts at a point convenient for the assembly department.

In changing over from the conventional to the "batch system" in handling parts, the increase of production to be expected is dependent on the size and shape of the parts, the finish to be obtained, the facilities for handling the parts, etc. At the Made-Rite Corporation the increase fluctuates on toasters and fans from ten to 15 times that obtained by the individual method. The saving in paints amounts to approximately one-third. In all cases a sprayer is able to turn out more work of higher quality and uniformity, in less time, with less physical effort, and with less paint.

New Blue Pigment

The first comprehensive laboratory report on the characteristics and applications of Syan Blue B, a product of the first new blue pigment in more than a century, is being distributed by Ault & Wiborg Corporation, New York, N. Y. Contained in this report are the results of tests and studies carried on for nearly two years in the Research Laboratories of Interchemical Corporation (formerly International Printing Ink), parent company of Ault & Wiborg.

The pigment from which Syan Blue B is derived is the new phthalocyanine compound discovered a few years ago by two Swiss chemists. Research in Germany and in England led to the commercial development of the compound, now hailed as the first new blue since ultramarine, which was discovered in 1826. The pigment is now being used in the manufacture of industrial finishes, lacquers and enamels, printing inks, and other products. According to Joseph R. Esposito, president of Ault & Wiborg, the unusual qualities of the new finishes make them well adapted to many applications in metal decorating and industrial finishing. It is said to be ideal for automobile finishes where alkali resistance and a non-fading brilliant blue are required.

Laboratory findings indicate that the properties of Syan Blue B make it, in many ways, superior to existing blues. Tests indicate it to be exceptionally fast to light and heat, to acids, alkalies, and limes. It is insoluble in oil, in spirits, and in nitrocellulose solvents. Characterized by high tinctorial strength and brilliance of shade, the color of Syan Blue B is said to be well adapted to all types of finishing uses. Its properties of fastness make it particularly well suited to applications which require a color resistant to sunlight, heat, and chemical reagents.

The report describes tests made comparing the new pigment with other existing blues—permanent and fugitive peacock, ultramarine, and iron blue. The only pigment proof to both acids and alkalies, and faster to light and heat than any of the present blues, Syan Blue B is shown in each case to have superior characteristics.

The results of "fadeometer" light fastness tests are illustrated graphically in the report, which reproduces samples of four blue colors before and after being subjected to light. Syan Blue B is represented as fading only slightly after 330 fadeometer hours (equivalent to nearly a year of sunlight). The next best blue from a standpoint of light fastness is iron blue, yet it begins to fade after 83 fadeometer hours, and in 125 hours, it shows very noticeable fading. Fugitive peacock blue fades badly in 1½ fadeometer hours.

The cover of the report is printed in Syan Blue B and several samples of the new color are included in the appendix. Copies may be obtained from Ault & Wiborg Corporation, 75 Varick St., New York, N. Y.

Titanium Pigments Book

The Krebs Pigment & Color Corp. has just issued a booklet giving a summary of the properties and uses of Krebs titanium pigments. In addition to classifying the titanium pigments produced by that company, the booklet also shows the various grades of each by trade name and the uses to which each can be put.

Represents Southern Lacquer Co.

Mr. Sid Hildress, formerly with A. C. Horn & Co., and a resident of Christiansburg, Va., well-known wood finishing salesman, is now connected with the Southern Lacquer Co. of Baltimore, Md. Mr. Childress has been connected with the furniture industry for a great many years and is recognized consultant on finishes.

Finishing & Decorating

CABINET-TYPE LUBRICATORS

by Howard F. Dean
Paint Shop Foreman
Aro Equipment Corp.

EXTENSIVE experimental work and many tests to find a hard durable finish that would be the most practical for use on cabinet-type lubricators have, in this instance, led to the adoption of synthetic baking enamels where oil enamels were formerly used and found to be lacking in hardness and durability. Finishes for lubricating equipment must also be able to withstand the deteriorating effects of present-day automotive lubricants with which they are used.

Tests demonstrated that baked-on synthetic enamels were much superior to the oil enamels formerly used, and further experiments were directed along the line of determining which of the materials of this type were the best to use, each sample submitted being individually tested to determine its resistance to the action of grease, acid, water, and light; and also for hardness.

Samples were submitted by four paint manufacturers, and the same tests were conducted on all makes regardless of their costs. It is interesting to note, however, that price was found to be no indication of quality. Reds, for example, varied in price as much as one dollar per gallon, but the red that stood up best under our tests was one of medium price. Black stood up best in all of the tests.

Each cabinet-type lubricator to be finished consists of three principal parts including the cabinet proper, the top stamping, and the pumping unit. The cabinet itself is finished in white with a 6-in. black band around the bottom, and a 1⅛-in. red stripe 2-in. from the top edge. Lettering is put on with decals. The top of the cabinet is a steel stamping with a

platinum-like finish. The pumping unit consists of base casting and head casting, with a steel shroud covering up the mechanism between them. The base casting is finished in red, and the head casting and shroud are given a platinum-like finish to match the top stamping of the cabinet.

The platinum-like finish is produced by using an aluminum paste mixed with a synthetic vehicle which produces a finish similar to a plated finish; but when given the water-white clear coat it has a platinum effect. This finish stood all tests extremely well; it is very hard and durable, and reaches its maximum degree of hardness in three days of aging after baking.

A satisfatory white was difficult to find. Only one company produced what we wanted—a hard blue white—but the one selected stood up very well under our tests.

Cleaning; Tack-ragging Baked Primer

In finishing the cabinets, they are first washed with a mixture of V. M. P. naphtha and thinner. Then they are tack-ragged.

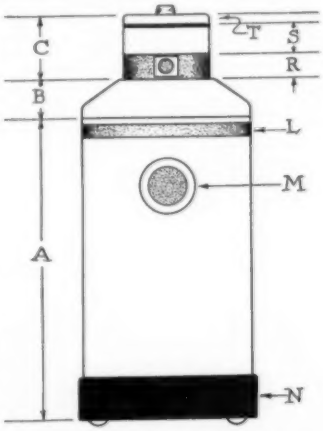
On this job the foundation for a good finish is a high-bake primer which is baked at 325°F. for 1¼ hours. After cooling for 30 minutes, the cabinets are sanded on a hand revolving turntable. For the sanding operation, one of the new type 5½-lb. portable sanding machines is used with No. 280 wet-or-dry sandpaper. It was found that machine sanding requires one-half the time of hand sanding, and is far more efficient. The surfaces are tack-ragged again, the enamel is applied with a new type synthetic gun, and baked for one hour at 260°F.

Masking for Colored Bands

The cabinets are then ready for striping, which is done by masking with heavy paper and tape. The 6-in. black band around the bottom of the cabinet, and the 1⅛-in. red stripe around the top are sprayed on. The masks are peeled off and the cabinets are baked again at 260°F. for one hour. It has been found that the resulting finish from the two bakings is more durable than when only one bake is used.

The Pumping Unit and Lid

The pumping unit (Section C, Fig. 1), consisting of base cast-



The outfit consists of a pressed metal cabinet (section A), a lid (section B), and a top enclosure for the pumping unit (section C). The lid B sets down over the top edge of the cabinet A, extending down ¾-in. Top enclosure C consists of three parts—a base casting R, a top casting T, and a sheet metal shroud S.

Welded feet on inside of cabinet rest upon a 4-wheel dollie, making the outfit portable. The cabinet is white with a black base N, red band L, and a red decalcomania M. The lid B and parts S and T of the top enclosure are finished in light aluminum. Base R, of the pumping unit, is in red.

ing (R), head casting (T), and metal shroud (S), is finished next. The base casting is degreased in a degreasing machine, and given a coat of synthetic filler. The filler is brushed on and padded out with a leather pad moistened with synthetic thinner. To do this job also requires considerable time—and experience in handling the pad is very essential. The filler is baked one hour at 260°F., and then coated with a combination primer and surfacer, each coat being gas sanded; then the surface is enameled red and baked one hour at 260°F.

The top casting has the same filler and primer operations, although it is given the platinum-like finish which consists of an aluminum coat baked at 260°F., and a coat of clear synthetic. This clear coat is of the type cut with V. M. P. naphtha, rather than toluol or synthetic thinner. The reason for this is that if the aluminum coat should be a little heavier in any one place and is not baked quite so hard as in another, the clear coat will not pull or wrinkle the finish; and the soft spot, if there is one, would harden on the re-bake. The clear coat is baked at 260°F. for 40 minutes. This clear coat is "touchy" and should be applied very evenly with a thin coat. A heavy coat will not bake out in the specified time, and a longer bake will yellow it.

Next, the shroud is given the high-bake white primer formerly mentioned, and the platinum-like finish the same as the top casting.

The last piece is the cover (Section B, Fig. 1)—a steel stamping. After being degreased, it is primed and baked with high-bake white primer, and given the same platinum-like finish as the top casting.

Decalcomanias

This completes the painting operations; the cabinet is then ready for the decals. A round decal.. with the company trade-mark is placed on the front side of the cabinet. (See M, Fig. 1) The type of lubricant with which the lubricator is to be used is indicated by a decal. of the transparent type—with aluminum letters placed on the 1⅛-in. red stripe. Both of these decals. are water-type, lacquer coated on the outside.

The materials and methods adopted produce a finish that is not only very attractive in appearance but also hard, durable, and highly resistant to the action of grease, acid, water, and light—a finish that meets all of the requirements for a unit of this type.

Waterproofing Fabrics

Technical bulletin No. 205-B, published and distributed by the Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa., gives directions for treating fabrics to make them water resistant.

The method is based on the well known reaction of stearic acid and aluminum salts, to form an insoluble aluminum soap, to which effect is added the water repellancy of paraffin and other waxes. In the case of the one-bath process, the aluminum soaps are already formed in the emulsion or the formation is completed as the fabric dries.

First Aid for Burns

A first-aid kit, specifically designed for the emergency treatment of burns has been developed by the Davis Emergency Equipment Co., 55 Van Dam St., New York, N. Y. The Davis Burn Kit is furnished in bright red enamel and is conspicuously labeled "First Aid for Burns." It contains everything needed for first aid treatment of burns, including "Tannoid," a jelly containing 5% of tannic acid, which is today recognized and accepted as a most effective treatment for burns.

New Furniture Styles,

AS SHOWN AT THE JULY EXHIBITION

REVIEWING THE SUMMER market at the American Furniture Mart, where more than 800 manufacturers of home furnishings showed their lines to 10,079 buyers from 5,459 retail stores, these highlights stand out as of particular interest:

A general feeling of optimism was registered in all lines. Buyers seemed more interested in styles, quality and construction than price, and were definitely trading up. Merchandising ideas and new merchandise, away from the run-of-the-mill type, that offered possibilities from a merchandising standpoint, received considerable attention.

Few if any "freak" designs were shown, manufacturers concerning themselves more with styling than innovations.

Blond woods have settled down almost as rapidly as they arose; while blond suites remain in many lines, new suites have not been added in the type of blond finish originally introduced 12 months ago. In the lower price brackets, some new suites were brought out in a golden blond finish in bleached maple but generally, new light finishes stress the natural color of aspen, satinwood, etc., and new light finishes have taken on an ambertone and fruitwood finish.

Mahogany is shown in a brown tone with a dull flat finish, referred to as patina or

by Rosalie Flank
American Furniture Mart

Left: A bedroom grouping trademarked and copyrighted by Empire, Ltd., under the name "Muebles Manana"—shown with picturesque accessories suggestive of old Mexico and Pan-America. The figured wood surfaces have a sand colored finish termed "Desert Dawn." Woods used include abedul, ayous, arce and caboba.

Right: The cactus motif is featured on this open-front china cabinet which is part of the "Muebles Manana" grouping. Subtle green trim and cactus legs contrast with the "Desert Dawn" color of the wood and the dusty rose upholstering on the chairs. Silver rope pulls and moldings are faithful replicas of ornaments from the saddle of Ramirez of Guadalajara, Mexican General.

Photographs, courtesy of American Furniture Mart

Finishes, Colors & Woods

OF THE AMERICAN FURNITURE MART

old English. While red mahogany is shown for the Southern and New England trade, the majority of new pieces are more brown, with a rubbed and hightlighted finish. Pickled mahogany (with a white filler) was noted on some lines. With the revival of Colonial bedroom and dining room lines, many manufacturers have played up the use of mahogany in a Colonial finish. Natural mahogany is also shown with a clear lacquer sealing the color.

Walnut is used in quantity on French pieces, the frames on upholstered pieces being finished in a soft brown butternut color or fruitwood finish. Some bedroom lines showed modern suites of solid walnut, a pink filler having been rubbed into the pores of the natural walnut, and then closed with a clear lacquer. The pinkish cast added an effective note to the walnut. The trim on these pieces was usually brass. Many French bedroom suites were also shown in walnut, in a dull finish. Natural walnut in "fawntone" was shown on some lines.

Oak remains a popular wood for dinette and kitchen ensembles. Oyster white oak, trimmed with tangerine, green, blue, wine and navy enamel, is favored over pastel tinted oak, although more yellow and green oak were shown than in past seasons.

Maple; Birch

French Provincial styling has taken hold on dinette lines; maple and birch are shown finished in

a new Provincial color as well as the natural maple color. It is predicted that the Provincial influence is destined for a good play in the dinette lines, for the transition from plain maple or oyster oak is new and interesting and adds a new delicacy and grace to this popular offspring of the dining room lines.

Clear waxed birch is shown extensively on juvenile ensembles, an alternative being all-enameled suites in blue and pink. The enameled suites use the same color throughout, even to the drawer pulls, and the pink has taken on a new intensity that adds a modern note to the juvenile ensemble. The same is true of blue which has passed from the light pastel to a true blue, boyish and modern in feeling. Many juvenile ensembles are also shown in maple with blonde maple trims.

Sombrero drawer pulls and cut moldings, designed from motifs in the Palace of Columns at Mitla, add a Latin American atmosphere to this chest of drawers, part of a "Pan Americana" grouping. . . . This design combines the simplicity of line essential for modern interiors with warm colors, such as Toltec green and Aztec red. Chest and chair have a smooth waxed finish of "rawhide brown" on abedul.

Upholstery Covers

While some imported fabrics were used, for the most part domestic fabrics were shown, and the striking beauty of the new upholstery covers proved one of the sensations of the market. The manner in which they were used is also a credit to the manufacturers. Particularly noticeable was the appropriateness and adaptability of the fabrics to the period designs, as well as the great strides made in the design of fabrics for Colonial and modern furniture. Turquoise blue, cerise (shocking pink), chartreuse and shades of yellow are the new shades entering the fashion picture. Blue and wine have replaced rust and green in the volume lines.

Brocatelles favor large flower designs and are shown in a silvery sheen, which blends well with all type frames. Stripes remain good—shown both in texture weaves on pile fabrics and in colors and novelty weaves on satins, damasks and tapestries. In many instances manufacturers have played up the beautiful upholstery by very simple styling. The result was effective and was well received. Antique brass nail heads are a popular trim. Leather continues to make a stronger appearance each market, this year being included in many lines in period and lounge chair styles.

Heppelwhite, Sheratone and

Adams styles made a consistent appearance in living room and dining room lines at the expense of Thomas Chippendale's models —the clean cut, straight lines, modern in feeling offering a new note in the 18th Century style picture.

The "Modern" Style

Modern staged a primary comeback in the quality upholstered lines—the new treatment followed the curved horizontal line and employing the loop and the circle rather than the rectangle and the square of former years.

Legs have been added to Modern upholstered pieces and are curved and tapered; arms have been narrowed and gently curved.

In the bedroom lines, Modern is more in evidence than in dining room or living room lines. Manufacturers are now concerning themselves with mirror treatments. Many modern bedroom suites have unusual mirror treatment and hardware for the main decorative theme. Single and double beveled edges are shown; also colored glass borders and etched trims. Hardware, both of wood and phenolics, is used sparingly, usually only on the center of the drawer. In many cases, finger grooves are substituted for hardware.

Case pieces have added tapered legs. Waterfall fronts have become more conservative. Locks, built into the sides of case pieces, are featured by many manufacturers. Many Modern bedroom lines include vanities with revolving doors and various types of compartments for added utility. Wardrobe chests continue to be shown.

Bedroom and Dining Room Suites

In the traditional bedroom suites, ladder back, chair back and poster type beds are shown on 18th Century and Colonial suites. The Williamsburg restoration has revived interest in Colonial styling. Southern Colonial suites with turned posts, pineapple beds, framed mirrors and bonnet-hood highboys were shown. Both cut glass and traditional brass hardware are used on these suites.

Dining room lines run to 18th Century and period styles rather than Modern. Modern being stressed mainly in the dinette size.

Part of an 18th Century bedroom ensemble made of solid mahogany. The lattice-work auxiliary shelf is portable and may be detached from the chest. The ladder-back chair is upholstered in white leather and trimmed with ornamental round-head nails.

Interchangeable groupings continue to be shown. Corner cabinets have been added to many groupings.

French suites appear in all price brackets, with considerable more shown in the lower price bracket than heretofore. These have ivory enamel trims (replacing the old bone white) and are usually heavy carved in the Rococo manner. In the higher price brackets, more refined carvings are used.

China cabinets have added mirror-glass backs and glass shelves. Some French suites are shown with curio cabinets in gold leaf mounted on wood bases to match the suites. Leather is being used to upholster many dining room chairs in all price brackets.

Many French bedroom suites have added arm chairs, and manufacturers of boudoir chairs have included love seats and swivel arm chairs to their groupings. Wood tassel fringe is a new note in decoration on boudoir chairs.

More French Provincial dining room and bedroom suites are shown than heretofore, but they are still spotty. French living room furniture, however, have taken on a Provincial air.

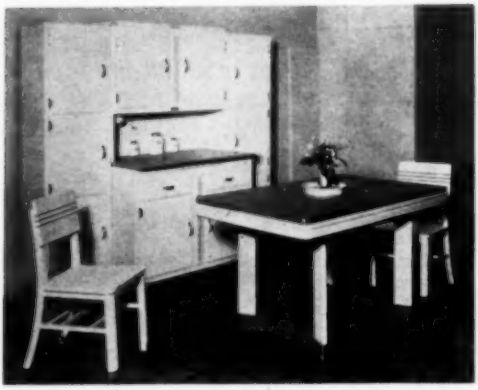
Dinette Suites

Dinettes, which seem to be making the greatest progress in the dining room line, are adding touches of color and carvings. Interiors of chinas are enameled in a color that is carried out in either leather or fabric upholstered chair seats, and striping on the tables and chairs. Green, orange, red and yellow are favorite trims, although many fruit and flower colors are shown.

French Provincial dinettes have a Louis XV type foot, ladder back chairs, and open hutch-type chinas with scalloped moldings and enameled trims. Simple typical carvings, used sparingly, add a new touch.

Mexican and Pan-American Styles

Of greatest news in the bedroom and dining room lines was the introduction of a new Mexican type furniture. It is made of ma-



A new idea in kitchen ensembles is introduced in this grouping . . . . Coral-colored linoleum table and cabinet tops are accented with bands of chrome. Coral stripings on the chairs and solid wood bands at the feet and table base add a new note of interest. The hardware resembles strand wire and is finished in chrome, as are the outside hinges. Also available in white and lettuce green trim, and in oyster white oak with wine or navy trim.

hogany and birch and finished in a "desert dawn" and "Tabasco brown"—with native cactus, sombreros and ring drawer pulls adding a Latin American influence. Three bedroom and two dining room groups were introduced by a Rockford manufacturer. The ensembles are trademarked and copyrighted, and merchandised under the names "Muebles Manana," "Pan-American" and "Mexican Modern."

Novelty Furniture

Novelty furniture followed living room styles more closely than heretofore and thus enjoyed an excellent market. Buyers, low on styles, showed their appreciation of better styling with orders. Many consoles and commodes were shown. A new type of coffee table in a tea table height (considerably taller than a coffee table and just a few inches shorter than an occasional table) made its debut. Handles appeared on many coffee tables, as well as outside hinges—a very "English" atmosphere acquired with a new patina finish.

Kitchen Furniture and Appliances

Kitchen ensembles employed linoleum tops in addition to enamel and stainless steel, a new color combination being coral and lettuce green with white enamel; also wine and navy with oyster white oak.

Appliances continue to stress streamlining, white being the most popular color trimmed with chrome, red, black or delphinium blue. Delphinium blue continues to make a stronger appearance in the kitchen field, running a close race with red for popular first choice.

Considered a generally satisfactory market, all lines that introduced new merchandise which contributed to the style picture were rewarded with orders by buyers who have become more style conscious and less price conscious than ever before.

Detroit Rex Products to Build New Factory

The Detroit Rex Products Co., Detroit, Mich., manufacturers of solvent degreasing equipment and materials for cleaning metal preparatory to product finishing, announce that they have been obliged to seek larger manufacturing facilities for the second time within a year. Accordingly, a new modern factory building is to be erected on a plot of land adjacent to the present main office building at 13005 Hillview Ave. The new building will be 100-ft. wide, 300-ft. long, and of a single story monitor-type design with a two-story front containing spacious and well-lighted engineering offices, drafting rooms and a new and completely equipped research laboratory. The building will be of a general brick, concrete and steel-sash construction.

Increased production facilities, made possible by this new factory, will enable the company to speed up delivery on all designs and sizes of degreasing machines . . . . A complete engineering service on metal cleaning is furnished to all customers and prospects. Branch offices are maintained in New York, Chicago and Cleveland.

Marietta Builds Laboratory

The Marietta Paint and Color Co., Marietta, Ohio, announces that it has awarded a contract for the construction of a modern laboratory building. The new laboratory building will be constructed of brick and concrete, and will house complete miniature manufacturing units for investigative work on paints, varnishes, lacquers, wood stains and fillers. Several of the rooms devoted particularly to research and testing will be air conditioned.

H. A. Derr is the technical director of the company and H. W. Barlow is research superintendent.

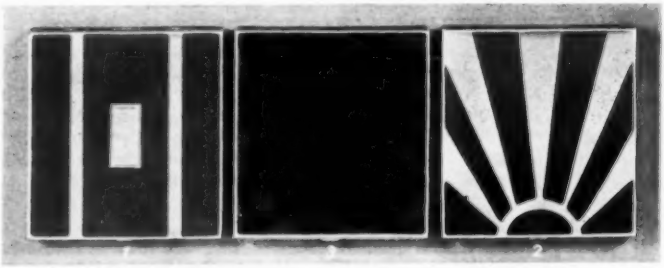


Fig. 1—Fronts of three square vanity cases. Nos. 1 and 2 are made of nickel silver which shows white in the picture. The darker portions of No. 1 are light blue. The darker parts of No. 2 are black in the half moon but the black blends into bright red as the rays spread and become wider. Case No. 3 is made of "low" brass which looks like gold. The dark mottled color is in two tones of brown.

Finishing Vanity Cases

by L. E. Dexter

ARTICLES that you find in the jewelry store or on the jewelry counters of department stores must be of pleasing design and have a smooth attractive finish. They are subject to close inspection by discriminating buyers of luxuries, and they are due for considerable handling once they have been purchased.

Take, for instance, metal vanity cases and cigarette cases. Many of these appear in a brightly polished natural metal finish with some color added in the form of a lacquer enamel coating. Just to get going somewhere, suppose we consider three typical square vanity cases, each about 5/16-in. thick when closed. The other dimensions are 2⅛ by 2¼-in. The fronts of the cases are shown in the illustration marked Fig. 1. Cases No. 1 and No. 2 are made of 18% nickel-silver stock, but case No. 3 is made of a "low" brass that looks like gold.

These articles come to the lacquer enameling room chemically cleaned, with the fronts and backs hinged together. The first thing we do is to "cut down" or "grease buff" the sides (or edges) and front of each box. We use a 10-in. diameter buffing wheel that rotates 3000-r.p.m. The harder the cloth buffs the more rapidly they will cut. I recommend something between the texture of canvas and felt for this work. The wheel may be anywhere from 2 to 4-in. wide across the face.

To hold these thin vanity cases securely while the buffing wheel is doing its work on the face or front side, we have a small block

of wood with a shallow recessed square cut into it to receive the case flatwise. Of course, the case projects above the level of the block so that the full force of the buffing wheel will be spent on the vanity case. To buff the four edges, the operator simply holds about three or four cases free hand in an old piece of cloth, buffing first one set of edges and then the other until all four edges of the three or four cases are completed. We do not buff the backs of the cases because these are to be covered solidly with lacquer enamel later.

With the buffing completed, our next operation is chemical cleaning — a very important bit of work. In fact, we have two cleaning operations. First, the cases are put through a degreaser to remove the polishing compound which often becomes "caked on" in places. We do this by hand, using holders that are about 4-ft. long, each holder taking about 12 cases in open position. Referring to Fig. 2, one of these holders consists of an iron rod to which are attached spring-steel wire fingers. The wire fingers can be sprung together a little to admit an open case, and as they spring back inside the case they hold the case firmly in open position, as shown in Fig. 2. We submerge the loaded holder in the hot liquid degreasing solution, swish it around a little, then bring it up and wave it slowly in the vapor above the degreasing tank. The cases come out completely dry. Leaving the cases on the same holder, we put them through an electric cleaner, after which we rinse them first in cold water and then in hot water. Then we dry them in sawdust.

Now that the cases have been buffed and thoroughly cleaned, they are ready for their lacquer enamel coating. Since we want the lacquer enamel to show only on certain parts of each case, we employ stencils or masks to shield the spray from those parts that are to remain uncovered—where the polished metal will show. The stencils are made of sheet metal (gilding metal) and are about 2-in. larger in size than the dimensions of the article to be sprayed, so we have at least a 1-in. projection all around.

The backs of cases No. 1 and No. 2 are in one solid color, therefore the hole in the stencil is made almost as large as the case. A sketch of the front and back of a typical stencil appears in Fig. 3. At one end or edge the stencil is slotted so it can be readily fastened to a stencil holder with a thumbscrew. In making the stencil, the four guides (little bars of brass about ⅛x⅛-in.) marked G, (Fig. 3) are soldered into position before the large square opening is cut. These guide bars are spaced to admit the vanity case, and the opening must be accurately squared with them. The edges of the jigsawed openings are carefully filed straight and clean.

Formerly the spray man held this stencil over the case with his left hand while holding the spray

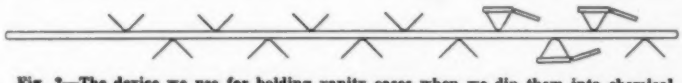


Fig. 2—The device we use for holding vanity cases when we dip them into chemical cleaner is an iron rod about ⅜-in. square and 4-ft. long. It has six wire clamps soldered to each side so that 12 opened vanity cases can be easily attached to it.

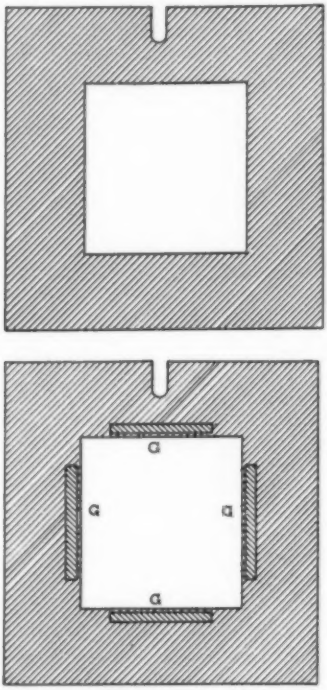


Fig. 3—Front and back of a plain open sheet-metal stencil for use in spraying the backs of square vanity cases illustrated in Fig. 1. Notice the brass guides marked "G" on back. Stencil is slotted on one edge so it can be easily clamped to the stencil holder shown in Fig. 4.

gun in his right hand, but now we fasten the stencil to a simple holder which is mounted at convenient height inside a small bench-type spray booth, see side view marked Fig. 4. The slot in the stencil easily fits around the threaded part of a thumbscrew which, when tightened down, clamps the stencil to the holder, supporting it in mid air as shown in the illustration marked Fig. 4.

Now that you understand the stencil and how it is fastened to the holder, you can readily see how our spray operator picks up a case with his left hand, holds it in position against the underside of the stencil (see dotted lines in Fig. 4) and sprays the first coat of lacquer enamel. No primer coat is used. We use a lacquer enamel that will adhere satisfactorily to the clean metal. We spray on a moderately thin coat of the lacquer enamel, let it dry for one hour, and then spray on another coat, which is the final coat if it is to be a solid one-color job on the back — as it is with vanity cases Nos. 1 and 2. We let this last coat dry three hours; then we turn the cases over and spray the fronts. A good spray man will easily spray 110 cases per hour, one coat.

We always have two or more identical stencils for each job. While one is in service on the holder, the others are lying in a pan of ethyl acetate so that one can be instantly picked up, brushed clean, blown dry, and placed in service when a stencil on the holder becomes too heavily coated with lacquer. Sometimes we can only spray six cases before changing to a clean stencil. This spraying is done at about 30-lbs.

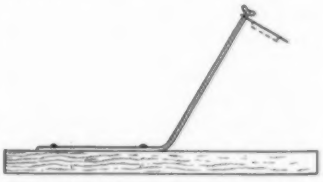


Fig. 4—Side view of the stencil holder mounted on bench or table in spray booth. Stencils are attached by a thumbscrew. Vanity case to be sprayed is held back of stencil as shown by dotted lines.

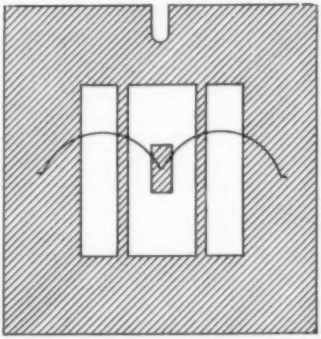


Fig. 5—A stencil for front of vanity case No. 1, as illustrated in Fig. 1. The small signet shield or "island" in center is held by a double bow-shaped wire soldered to it and to the side of stencil.

air pressure, and the lacquer is mixed to "flow wet." Special care must be observed about the consistency of the lacquer enamel. If it is too thin it will run under the stencil; if it is too heavy, it may show orange peel effects.

After each spraying, the vanity case are laid flatwise on 24x24-in. screen trays to dry. These screens are placed in portable racks, each of which holds 24 screens. This simplifies our problem of handling and racking the freshly-sprayed vanity cases.

The stencil for the front of vanity case No. 1 is made like the one shown in Fig. 3, except that two parallel hands and an "island" (signet shield) remain as masks to prevent coverage by lacquer enamel over these areas. The island or signet shield is held in position by a soldered wire which bows upward to allow lacquer enamel to be sprayed under it, see Fig. 5. The spraying of two coats, each followed by placing the cases on screens to dry, is the same as described for the backs of the cases.

The final work on a completely lacquer-enameled vanity case consists of light sanding and polishing—both operations being done the day following enamel spraying. Just before polishing, we go over every lacquer-enameled surface lightly with very fine sandpaper—No. 8/0 or No. 280. The workman makes just a few light strokes from back to front. If there is one or more specks on the work, this light sanding removes them; and if there is any trace of a slight orange peel effect, this sanding helps to remove or subdue it.

Our polishing wheels are made up of discs of flannel cloth 10 or 12-in. in diameter. These cloth discs are built up to about 4-in. in width for polishing cases 2 to 2½-in. wide. The polishing wheels rotate 1800-r.p.m. We use a polishing compound that doesn't leave any trace of grease or other residue on the surface of the cases. In polishing these lacquer-enameled cases, it is important to

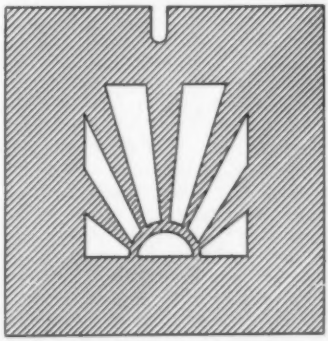


Fig. 6—This stencil is used for masking the front of vanity case No. 2, as illustrated in Fig. 1 . . . . at the right.

move the case with the direction of the stripes or lacquered edges.

The last thing that is done, after the cases are all put together and in the packing room, is to polish them lightly by hand. In the case of white or light-tinted enamel surfaces, this polishing may call for the use of a little "cleaner-polish," followed by wiping with a clean flannel cloth. However, in most cases, a quick wipe-off with a dry flannel cloth is sufficient.

For finishing the fronts of vanity cases like No. 2, we use a stencil like that illustrated in Fig. 6. The first coat is red lacquer-enamel; the second coat consists of a thin black shading lacquer made up by thinning the regular black enamel in the proportion of one part of black to three parts of thinner. This shading coat is applied by cutting down the spray pressure and spraying from the position of the half moon on the stencil, giving a sort of partial sunburst effect that is quite attractive.

Following the shading, we spray on two top coats of clear lacquer. These No. 2 vanity cases are polished in the same way as described for the No. 1 cases.

The cost of buffing, cleaning, lacquer-enameling, and polishing vanity cases like No. 1 is about 3c each . . . . and 3½c each for vanity cases like No. 2.

On No. 3 vanity cases, the buffing, cleaning and drying operations are the same as for the other cases. The first spray coat of lacquer-enamel is put on the front and back in the same manner as we spray the backs of cases No. 1 and No. 2. The first coat is a light brown or tan. To secure the mottled effect in dark brown, we thin the brown in the proportion of one part of lacquer-enamel to three parts of thinner. We lay a stencil like Fig. 7 over the stencil illustrated in Fig. 3, and spray through the openings, but in spraying this mottled effect we cut down the lacquer adjustment by maintaining a wide spray and

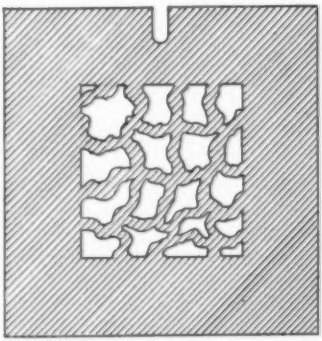


Fig. 7—To produce the mottled two-tone effect revealed on vanity case No. 3, in Fig. 1, we clamp this stencil over a plain open stencil like that shown in Fig. 3.

use about 25-lbs. of air pressure. This is not what you would call a "wet coat"; it is more of a fog coat. It dries quickly and, if we wish, we can spray on a clear top coat over it within 5 minutes. We usually give this type of case two coats of top-coat lacquer, so there will be less chance of having any rejects after the polishing operation. After lacquer-enameling the front and back surfaces girls wipe the highly polished metal edges with ethyl acetate and then spray them with a clear metal lacquer, the operator holding the case between his thumb and finger (pressing against top and bottom of case) while spraying all four edges. Polishing follows as described for cases No. 1 and No. 2.

Degreasing Metal

BY SOLVENT AND ITS VAPOR

by Charles W. Hardy
Industrial Consultant

"PERFECTLY CLEAN" is a common expression . . . easily said and constantly heard in most all plating and finishing departments. Unfortunately, however, it is not always consistent with facts. What is generally meant is that "it is as clean as we can get it with our present cleaning methods and equipment." In many plants this important function is completely ignored and is a costly mistake on the part of management.

To remove grease, oil, abrasive, tripoli, lime, rouge, etc., from parts and finished articles after they have been machined, blanked, stamped, formed, threaded, ground, polished, cut down, colored or glossed, before being pickled, descaled, sandblasted, electroplated, lacquered, etc., is not an easy task. Solvent degreasing has been and will continue to be a great help. Its methods of application are rapidly being increased and constantly improved. Its principles are correct for its purpose and it is positive and practical in its application.

Degreasing Equipment

Degreasing processes have been greatly improved during the last few years due primarily to changes in equipment and the ability to immerse parts in one or more compartments containing liquid. To clean by vapor condensation has been a big help over the former type of machine as originally constructed. The latest development — a combination of water jacket and vapor level control arrangement—insures a more positive means of efficiency in the saving of solvent used. The idea is a "check valve" on the vapor, thereby saving the solvent which is expensive. To be specific this arrangement has reduced the solvent loss approximately 28% to 30% . . . . simply by reclaiming by condensation.

The writer is certain that within the next year, more chemical and mechanical research (which is now being carried on) will disclose more improvements to save on solvents.

Inasmuch as there are now three basic methods of solvent degreasing known as: 1) vapor, 2) immersion, and 3) spray, we have three different types of standard equipment. Briefly the processes are:

The Vapor Process

The vapor process is used for flat and other various shaped

parts having no deep recesses—not drawn parts nor those made from thin gauges of metals. This method of degreasing has its limitations and the wrong selection has hurt the degreasing application a great deal. This is the principle of the machine that was first made for degreasing metal surfaces by solvents. Briefly its principle is to condense or return to liquid the solvent's vapor which completely covers the work when put in the machine. This condensation continues as long as the parts are lower in heat than the vapor, as the vapor condenses to liquid form it runs off the surface and carries the oil and grease in solution with it.

Immersion Process

In the immersion process the parts are dipped into boiling solvent which is constantly agitated in different directions and generally removes any solids or lumps of grease. This method requires a machine having two or more compartments—a cool clean chamber of distillate or solvent rinse and then the vapor rinse.

Spray Process

In the spray process warm solvent is pressure-sprayed over the surfaces of the work. When the sprayed solvent runs off it carries all the oil and grease with it. Then follows a vapor rinse. This method is the most expensive, but it is probably the best. There are also combinations of the process just named.

Bench Model Machine

For small manufacturers or those who make small articles such as novelty jewelry, watch cases and parts, vanity cases, cigarette cases, metal initials and monograms, dress and millinery ornaments; belt, dress and shoe buckles, hand bag ornaments, metal pencils, ash trays, etc., there is a standard inexpensive machine which requires only a minimum amount of solvent—only a few gallons.

This machine is also very practical for degreasing narrow strips and wire made of aluminum, copper, steel, brass, nickel, silver, etc., before annealing, plating, lacquering, painting or shipping. It can be used as a liquid vapor (immersion), or hot and cold liquid plus vapor by means of a large vapor arrangement above the compartments. Heat can be supplied by steam or eletricity, but steam is preferable and lower in maintenance cost. It requires only a few gallons of solvent and needs but 2-sq.ft. of bench space. Baskets for holding work may be furnished by the machine manufacturer. The kind to use depends solely on the type and kind of parts to be degreased. Baskets are furnished for both hand and power rotating, the latter being necessary for cup-shaped parts or those that will nest, pile, stack or touch each other. This rotating insures maximum return of solvent to the degreaser, which is important.

Degreasing Solvents

The successful solvents are chlorinated hydro-carbons which must be stabilized, inhibited, non-explosive, not inflammable, and do not hydrolyze with water; they have a low and constant boiling point (boiling at about 190°F.); are easily separated from greases, etc.; can be used over and over again indefinitely; have penetrating vapors almost five times as heavy as air; and will not oxidize

or corrode metal. These solvents are made under many trade names but to the layman they are practically the same.

Many improvements have been made in solvents since the inception of their use for this purpose. A few years ago the demand for solvents was not great, but during the last few years it has increased by "leaps and bounds," and some of the larger sellers are now having solvents carried in stock in most of the large cities, so they generally can be procured within a day or two.

The only consumption of the solvent is that which is lost by vapor or evaporation. Machines can be equipped with distills so that the solvent is constantly being distilled, which removes the solids and oil contamination. There is also incorporated a separator for removing water from the solvent. If the still and separator are not a part of the machine, they can be purchased as separate units of equipment. Solvent is not discarded when dirty or contaminated, but is cleaned and used over and over again.

Many prospective customers make the mistake of confusing the degreasing solvent with ordinary, petroleum solvents such as benzine, naphtha and gasoline.

Solvent Degreasing and Alkaline Cleaning

Articles that are to be lacquered, enameled, varnished, painted, or coated with other organic coverings do not have to be subsequently cleaned in an alkaline cleaner, but can have the coating applied directly after being degreased — and this is in spite of a fine film of inorganic material on the surface. However, this is not the procedure to follow if the articles are to be electro-plated, although some platers claim they are getting good results by plating directly after degreasing. Not many, however, will agree that this is the right procedure to follow. They seem to think that it is still necessary to also clean in "potash" or an alkaline cleaner; but it is not necessary to allow the work to remain in the cleaner to "soak," which was formerly a part of the process. An immersion rinse may be all that is required, but a 10-second cleaning with electric current is usually preferred.

Even the manufacturers of the machines and solvents recommend and suggest the immersion rinse in an alkaline cleaner before electro-plating. The cost and time it takes to perform this operation is very small, and we all know that the cleaner the surface is for an electro-plate the better the final results.

Is It Necessary to Degrease?

Here is quite a logical question, and it is easy to answer. There can be no sound argument against the statement that the cleaner the surface (for any purpose) the better the final job. Therefore if another operation helps, we should be interested; that is, provided the additional cost of performing the operation will be offset by better results and on savings in following operations; for example, less supplies used; less labor; quicker to produce; less refinish work; less final rejects, etc.

I believe it is generally agreed that greases and oils can be removed quicker and better in a suitable solvent than in an alka-

line solution; but until the machine was made and improved, the application of the solvent was impracticable, and during the first few years of introduction this application had many disadvantages. Now, after some good sound experience in this line, we have learned and gained by the mistakes. The trial-and-error period has passed and we find that by immersing metal parts in the boiling solvent, cold rinsing, drying in the vapor, controlling consumption by condensation, distilling, separating oil and greases, eliminating fumes, etc., the process is quite simple, inexpensive and practical.

Alkaline cleaning solutions, when contaminated with oils and greases, are generally discarded, although we do try to take off some when "skimming the surface"; but now, when used in conjunction with the degreaser, we keep the oils and greases out of the alkaline cleaner and it lasts a great deal longer and does much more efficient cleaning.

The solvent, moreover, does the degreasing operation much quicker and more positive than the alkaline solution, besides which it removes the greases from cracks, pores, fine perforations, designs, etc., that are almost impossible to reach with the alkaline cleaner without hand brushing or scrubbing.

It also insures a more "chemically cleaned" surface and therefore is cheaper due to the reductions in spoiled work and rejects due to poor cleaning prior to the application of coating or plating. All metal parts degreased properly are rendered chemically clean and dried without trace of spots, stains, streaks, runs or marks.

Spray-Painting Instruction

The DeVilbiss Co., Toledo, Ohio, announces the schedule of their training school for the second half of 1937.

This school is open to industrial painters, master painters, automobile refinishers, and all others interested in learning the technique of spray-painting, and the use and care of spray-painting equipment.

The training period lasts for one week. Classes will start on the following dates: July 12, August 23, September 27, October 25, November 15 and December 13.

Special rates in Toledo hotels and boarding houses near the plant have been secured by the company for men attending the school.

These classes have been well attended in the past because of the facilities for study, otherwise unobtainable, offered by the DeVilbiss Laboratories.

It is advisable to enroll in the school as far in advance as possible, since the size of the classes must be limited, and since there will be no training periods other than those announced.

Monastral Fast Blue

A new booklet defining the uses of Monastral Fast Blue BS, a product recently announced by the du Pont Co., has just been issued by the Dyestuffs Division of the Organic Chemicals Department. The booklet also tells in what forms the various types of Monastral Fast Blue are available.

The booklet treats of the uses of this new pigment in printing inks, paint, lacquer and enamels, wallpaper, coated paper, paper, coated textiles, leather, cloth, cements for decorative purposes, linoleum, textiles and rubber. In several instances, samples of the use of the new shades are carried in the booklet.

What Bakelite Is

People often ask: "What is Bakelite?" In answer to this question the Bakelite Corp., 247 Park Ave., New York, N. Y., has just prepared a 16-page booklet entitled: "The Versatile Service of Bakelite Materials" in which the company gives the story of the development of various Bakelite resinous materials, their general characteristics, their properties and their applications.

ADVERTISING PAGES REMOVED

Tests That Fool You

AND TESTS THAT ARE REALLY PRACTICAL (PART II)

by W. T. Smith

Tests for determining durability and general efficiency of finishing coats for service on various articles to meet severe requirements.

RUNNING ALL TESTS in duplicate against a known standard material is a great help, but you still cannot apply a uniform thickness of film on any two pieces by any conventional method. Assuming that you control the viscosity of your test sample very accurately (as by the use of a McMichael or Stormer viscosimeter) control the vapor pressure and consequently the evaporation curve of your active solvents present, adjust your atmospheric circulation, temperature and absolute humidity to a required standard, and coat your specimens by distributing the material centrifugally by whirling (at a standard speed) on a spinner: Then, if you have used a planetary spinner to overcome the parabolic contour of the film surface resulting from a single rotary motion, you will have a test film of fairly uniform thickness and which will (if the above preparation is conducted skillfully and carefully) show a fairly consistent standard thickness in succeeding specimens.

The application of the conventional physical tests on dried films such as scratch, adhesion, impact, abrasion, mandrel or bending, etc., making the usual fine discriminations in reading results without using the above cited method for insuring first a uniformity of film thickness on the specimen, is like putting a telescope sight on a smooth-bore musket. The inevitable resulting inaccuracy reduces practically all of our popular test gadgets to a point where a trained and experienced observer with a simple viscosity cup, a spray-gun and an "educated" thumb nail can compete with them in a way to make one question the wisdom of an investment in much expensive scientific equipment.

Various types of the popular "accelerated weathering" machine, employing the rays of a mercury vapor or carbon arc in combination with a cold water spray and in some cases extremes of temperature, enjoy considerable usage even on furniture and other interior finishes. There is no doubt of the value of this equipment for aircraft or marine fin-

ishes, especially if very meticulous precautions are employed in preparation of specimens and conduction of the test. Their use in the manner followed in some furniture factories, however, is of questionable value, I believe.

Press-Mark Tests

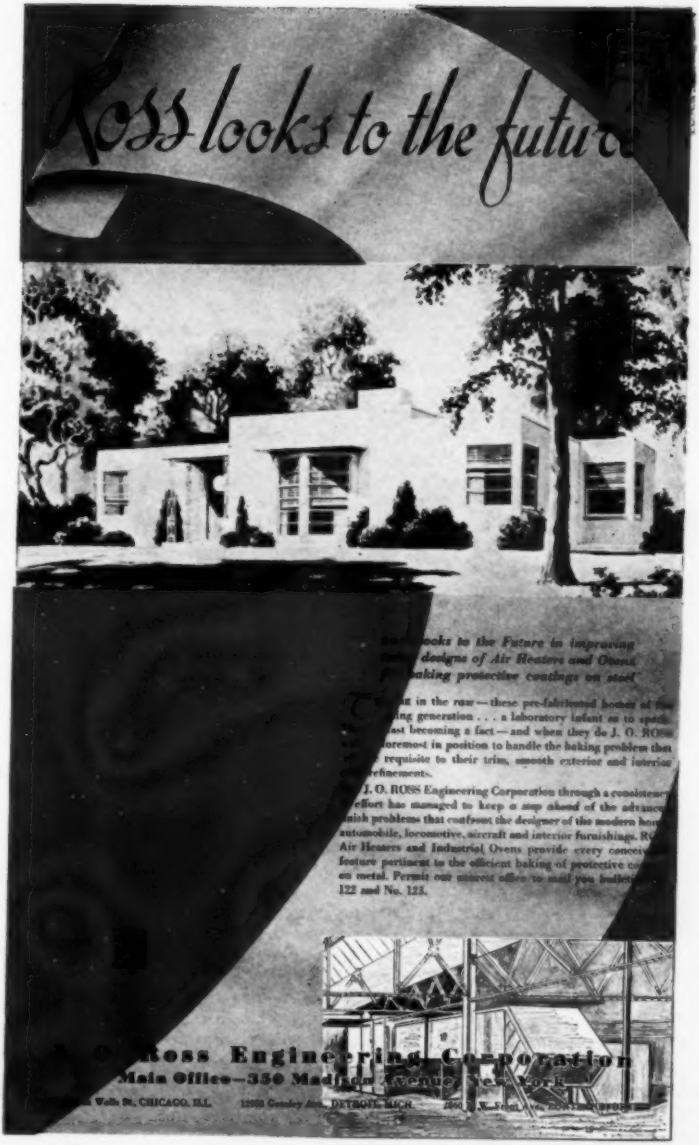
Print or press marking tests on furniture finishes are important and widely employed. In general they are perhaps more pertinent than many tests in use but are still haunted into an embarrassing inaccuracy by our old bogies —variable film thickness and drying conditions. Let us say that, like the few other tests that are actually worth performing, they are interesting indications but not actual proof of the true possible behavior of a material.

Cold-Check Tests

Cold check or "heat and cold" tests are gaining rapidly in popularity, especially among manufacturers of radio cabinets and pianos. They have been, in fact, a prominent phase of the test curriculum of the latter group for some time, dating back to the varnish days. These tests vary principally in the cycle of extremes of temperature applied and, what is more important, in the interval between preparation and testing of the test panels.

In practically all cases wood panels are prepared in a manner simulating as closely as possible the routine procedure used on the merchandise. After a drying interval the panels are subjected to a varying routine of alternating temperatures of cold ranging from ten degrees below zero to ten degrees above zero, and heat ranging from about 100°F. to about 110°F. The test specimens are allowed to remain in these respective atmospheres for from one hour to 48 hours, according to the whims and theories of the tester; then they are placed at once in the converse condition, or allowed to temper in ordinary room temperature for an equal period between. In any event, and in disregard of the exact routine of conducting this test, the basic theory is to employ the same principle that acts on a cold glass tumbler when you pour boiling water in it. If the coefficient of expansion is not such that it keeps pace with the change in temperature, fracture of the mass results. It would seem, therefore, that the more abrupt the change, the more efficient the test. Naturally the extremes of heat and cold used will be determined by the tester as those adapted to conditions which the merchandise must endure. Suffice it to say, however, that any heat-and-cold test performed on a lacquer film before the solvent has been released from the film is superfluous and worthless.

One prominent piano manufacturer makes cold-check tests at intervals, following coating, of 15, 30 and 60 days. This is a logical schedule and I'm sure their experience has taught them that testing after any shorter interval is valueless. Any experimenter who will take the trouble to run his routine cold-check tests as usual, but using metal or plate-glass test-panels instead of wood, might be surprised. Wood, even of the same species, is notoriously non-homogeneous and does peculiar and inconsistent things in the matter of thermal conductivity as pertains to a film on its surface. At the least it will temper con-


Ross looks to the future
looks to the Future in improving
designs of Air Heaters and Ovens
baking protective coatings on steel
in the raw — these pre-fabricated homes of
ing generation . . . a laboratory infant so to speak
ast becoming a fact — and when they do J. O. ROSS
foremost in position to handle the baking problem that
requisite to their trim, smooth exterior and interior
refinements.
J. O. ROSS Engineering Corporation through a consistent
effort has managed to keep a step ahead of the advance
nish problems that confront the designer of the modern hou
automobile, locomotive, aircraft and interior furnishings. R
Air Heaters and Industrial Ovens provide every conceiv
feature pertinent to the efficient baking of protective co
on metal. Permit our nearest office to mail you bulleti
122 and No. 123.
ross Engineering Corporation
Main Office—350 Madison Avenue, New York
Wells St., CHICAGO, ILL.
12903 Conley Ave., DETROIT, MICH.

siderably the abruptness of the change of temperature acting upon the film.

It is doubtful if prolonged exposure to intense cold (at least the approximate zero temperature used in these tests) has any particular effect on a lacquer film beyond the time required for the film to become uniformly chilled through. Prolonged heat will brittle any lacquer film and in that sense it becomes another matter due to the effect on plasticisers. The cold-check test, therefore, is "in," but let us consider solvent retention and the thermal conductivity of the underlying medium in making it.

The various scratch and adhesion tests may be dismissed as eliminated from the realm of really significant accuracy by the film thickness problem as discussed above. In the flexibility tests, there are few in which the matter of adhesion and a shear stress between the finish film and the surface do not enter to confuse the issue. The popular mandrel test is a combination trial of film flexibility and actual adhesion to the surface—not necessarily homologous factors.

Exacting Tests Are Difficult

For exacting laboratory tests for the finer technical discrimination, the great problem is similar to that dogging the steps of the tester of animal glues—the absence of a suitable, consistent, homogenous test medium or background. Wood is not a homogeneous substance and is not suitable for anything more exacting than the "observation, thumb nail" test. Most metal test panels are better but still variable in many ways. Perfectly clean plate glass is probably the most consistent, inert and impartial surface for displaying the actual properties existing in a given material but unfortunately it is not adapted to many present test procedures.

May we point out that the contention is that our pseudo-scientists are starting their bridge from the middle of the stream; that in any popular test that can be named today, the matter of control of conditions and preparation of samples is not in any sense commensurate with the attempted exactitude of the test applied; that a finish film applied to wood panels or to odd scraps of metal from about the plant with a spray gun, and dried or baked out under average normal conditions, embodies variables which render the application of any but the "thumb nail" test (we generalize) superflous and a waste of time.

Materials Formulated to "Beat the Test"

In conclusion, the attention of the consumer-testers might be brought to the fact that a finishing material can be—and often is—compounded deliberately to "beat" almost any test on which the consumer insists. We cite the case of a vendor of finishing materials who had worked long for an approval on a baking enamel from a large user, only to be informed that his material "fell down" on the abrasion test and was therefore unsuitable for their use.

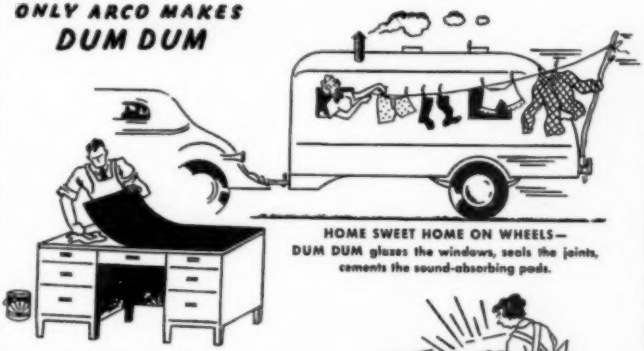
This abrasion test—a common one—consisted of a phonograph turntable on which the coated specimen was revolved, abraded by a circular typewriter eraser applied at an angle of about 15° to the radius. The number of

WHO KNOWS?

—WHOSE PROBLEM DUM DUM WILL SOLVE NEXT

Every day some new problem of sealing, sticking or silencing is solved by DUM DUM. You'll find a DUM DUM to meet every industrial production requirement. But be sure you get genuine DUM DUM.

ONLY ARCO MAKES DUM DUM



HOME SWEET HOME ON WHEELS— DUM DUM glazes the windows, seals the joints, cements the sound-absorbing pads.

STICKING DESK TOPS— Linoleum tops go on easily with DUM DUM but once on, they positively won't come off!

SILENT KITCHENS— DUM DUM solves the problem of metallic ring in metal sinks by dampening vibration.

SEALING IN THE COLD— Odorless DUM DUM forms a perfect seal between refrigerator food compartments and outer metal shells.

WILL IT BE YOURS?

Will your problem—(of calking, sealing, glazing, deadening or cementing)—be the next to be solved by DUM DUM? Write us your requirements. Our laboratory will be glad to help.

THE ARCO COMPANY
CLEVELAND • LOS ANGELES

LACQUERS • ENAMELS • SYNTHETICS

counted revolutions necessary to wear through the film in the circular path of the eraser determined the abrasion factor of the sample. A little thought, and a study of a competitor's approved material, led the vendor to add a couple of ounces of sheep's tallow to each package of enamel with the result that a lubricating film was spread over the baked enamel coat. The eraser slipped over it nicely; the test, like Tennyson's "Brook," "went on forever," and the account was sold. Incidentally, the sheep's tallow probably didn't improve the consumer's product enough to justify the cost of his abrasion tester.

This is a plea, therefore, to large consumers, who are so rapidly going "technical," to consider not only "Why" to test but "How?" lest they find themselves in the position of the colored gentleman who, on alighting from a merry-go-round ride, was greeted by his wife with, "Now, nigger, yo all done spent yo money; whar yo been?"

Paint Measuring Meters

From a letter sent us by a manufacturer of meters for measuring the quantity of paint, lacquer or other finishing material that flows through a pipe or hose during any given period of time, we gather the following information which is of interest to practically all users of finishing materials:

"We manufacture a special model of meter for measuring paints and lacquers flowing from pressure tanks to spray guns, and know that it will do exactly the work you want. This meter will give an accurate reliable record of paint or lacquer consumption in any spray gun line and will operate accurately even if only one gun is drawing off the metered line.

"One size paint meter is the same in external appearance as our grease meter, except that the dial registers 10 pints per revolution of the hand instead of eight pints. The meter comes complete with ½-in. union connections and the internal works are built for measuring paint, varnish and lacquer products.

"To be sure of getting successful service, keep the meter full of liquid to prevent errors due to air being measured by the meter and to prevent the material drying out in the meter between periods of use. All of these meters are built for working pressures up to 150-lbs.

"In purchasing these meters you are fully protected by a guarantee and by the long and successful use of these meters by leading furniture and cabinet finishers throughout the country."

A number of INDUSTRIAL FINISHING readers have inquired about such meters and we are taking this occasion to make it known that devices of this kind are available and in service.—THE EDITOR.

North Bergen Varnish Corp. Opens Executive Offices in N. Y. C.

A letter from the North Bergen Varnish Corp. states that:

"We are pleased to announce the opening of our Executive and Sales offices at 473 Canal St., New York, N. Y., where we shall be happy to welcome our friends and customers at any time.

"Our Sales Department, under the direction of our General Sales Manager, Mr. E. W. Holland, will be located in New York, N. Y.

"Our factory in North Bergen, N. J., will continue, as heretofore, under the supervision of Mr. W. J. Harris, Vice President and General Plant Manager.

"Additional plant facilities, plus the convenience and advantages of our New York address, will enable us to be of greater service to our customers."

Joins Designers for Industry

John E. Manning, C. E., formerly secretary and general manager of the Folding Products Corp., Chicago, has been appointed Western Manager of Designers for Industry, Inc., industrial designers, with headquarters in the Merchandise Mart, Chicago, according to announcement by President Chas. H. Oppenheimer of Cleveland. Mr. Manning succeeds H. C. Gooding who was recently appointed Eastern Manager with offices in Rockefeller Center, New York.

Ready to Serve You

A complete studio, staffed by artists and craftsmen who have the talent to create and the skill to produce, is an important factor in our plant.

It is important to us because it helps greatly in maintaining the highest standard of quality in our products and enables us to render a more complete service to our customers.

It is important to you because it gives, without cost, a service which includes an analysis of your product and the creation of a practical, sales-stimulating finish.

Many manufacturers of wood, plastic and metal products have used our creative studio service to their profit. We would like to be helpful in making your products more salable. Will you write us?

No obligation whatever.

Rockford Varnish Co.

ROCKFORD, ILLINOIS

Kindly mention INDUSTRIAL FINISHING when writing advertisers

Finishing Living-Room Furniture

In the June 1937 issue, on page 56, we notice a question about "Finishing Living Room Furniture." We also note your comments and advice to the N. H. Co. on the proper method of finishing living-room furniture to obtain a uniform color on the varius types of wood that they use in their frames.

Our company has developed a finish which is being used by a number of eastern living-room furniture manufacturers, and produces an extremely uniform result. The method is as follows: First, sand the wood smooth. The wood is then sealed with a special type of clear sealer and is stained with a non-grain-raising stain. It is then given a coat of sanding sealer and two coats of flat lacquer.

Using this method, we eliminate the dark spots and also the necessity of shading, due to the absorption of stain by the end wood and other parts of the frame where the wood is soft.—T. M. Co.

Pinholes and Blisters in Metal Finishing

We use a pyroxylin lacquer over a similar filler which has been sealed prior to the lacquer coat. There are two things that spasmodically occur to spoil the looks of the machines. One is the presence of fine pimples or pinholes; the other is the forming of blisters. Both of these conditions may show up either in the sealer or lacquer coat.

Questions Answers

We clean the castings by grinding where necessary. Then we use a lacquer type primer which is very dry before the filler is applied. The filler is allowed to dry thoroughly, and then is sanded, sealed and lacquered.

The air line has a filter close to the spray gun and is checked regularly for traces of moisture. The pressure is kept about 35-lbs. The fluid valve is open just enough to allow sufficient material to be deposited on the work to blend or flow out smoothly. Without warning, the pinholes or blisters appear. In the case of blisters, they s t a r t very small and often increase to ½-in. or ¾-in. in size as the lacquer sets up. These blisters have dry air inside, as they may be punctured and pressed down, but the hole will remain. We have been unable to find any consistent cause for these conditions and wonder what your thought might be on the subject? — H. M. Co. (Machinery Mfr.).

I have read this inquiry over several times and find it more convenient to give my opinions in a series of causes, rather than in any direct cause. There may, however, be a direct cause, but one would have to be quite familiar with the composition of the materials in order to pick it out.

My first impression is that the sealer is of a different type than

The marvelous Taj Mahal, built several centuries ago in memory of a great ruler's wife, still remains one of the world's most beautiful edifices . . . a gem of architectural perfection. Its gleaming white loveliness, its rich and colorful arabesques show little evidence of the destructive effects of time and the elements . . . its builder used only materials that possessed the combined qualities of beauty and endurance.

Endurance and beauty are equally desirable and necessary in the finish for metal products. That, in part, explains the swing to A & W "Tailor-Made" finishes by many prominent manufacturers throughout the country. Greater ease of application and superior adhesion are additional requirements met completely by A & W finishes, specifically "Tailor-Made" to fit individual production problems.

Call in the A & W representative and let him "iron out" the snarls in your finishing department with the proper A & W "Tailor-Made" finish.

AULT & WIBORG CORPORATION

NEW YORK, N.Y. CINCINNATI, OHIO

Builders of Fine Industrial Finishes

the rest of the materials and could easily be the direct cause of the blisters and pits. Blisters and pits are caused by one or two things: the escaping of trapped solvents, or the reaction of solvents in the different types of materials. If you allow the filler and primer to dry thoroughly before applying the sealer, then I would feel that possibly the sealer is s o m e t h i n g other than straight pyroxlyn, the solvent of which penetrates into the lacquer and is trapped by the quick sealing action of the sealer. The penetration of such a solvent could swell or expand the undercoats and cause blistering or pinholing on escaping while drying. All pyroxylin materials dry by evaporation and many of the sealers dry by oxidation plus evaporation of solvent.

In the event that the sealer used is of the lacquer type, then I would feel that the very small blisters and pinholes are caused by escaping solvents alone. This may appear immediately after applying the sealer, or it may not appear until after a heavier finishing coat of lacquer is applied.

The larger blisters which form indicate an unbalanced s e a l e r which traps solvent and also has poor initial adhesion. I would also question whether or not the finishing materials used are purchased as a system from one manufacturer. If so, it is a problem which the material manufacturer can easily adjust, but if the system is made up of different manufacturers' materials, neither one will accept the responsibility as applying to his own materials. It is generally considered good practice to purchase the entire system from one manufacturer in order to create competition and minimize working difficulties.

There are other causes of pinholing which, in my opinion, are not quite so common. If you are successfully removing moisture from the air line, and if no heat is being used in the drying of these parts, I feel reasonably sure that the trouble can be corrected by making a change in the sealer.

Since there is no mention made of the use of water for rubbing the surfacer before applying the sealer, it might be well to check this point before condemning the sealer or other materials. In other words, the surfacer is very porous and absorbs moisture readily when it comes in contact with water, or the use of heat would force out the solvents too fast.—E. A. ZAHN (G. E. Works Laboratory).

The trouble you are experiencing, like many troubles of a similar nature, is best solved through a process of elimination. You may readily ascertain through a series of tests just which one of a group of potential sources of trouble is causing the pinholes and blisters you mention.

I do not wish to jump at conclusions, for some of the troubles encountered in finishing have a different cause than the apparent one and require experimentation to trace them down, but the preponderance of probability points to a faulty thinner—one that is too fast and unbalanced in evaporation rate due to improper ratio of active solvents and the hydrocarbons. A thinner of this type does not maintain the proper solution strength to the very end when all the solvents have evaporated, therefore it may disrupt

CORALLAC

The High-Solids Sealer
Durable—Economical

CORALLAC economy is a welcome note amid universally advancing prices. The remarkable quality of this blend of high viscosity nitrocellulose and gums has been fully proved over a period of years.

Corallac is lower priced than most sealers. And its exceptionally heavy solids content makes it a sensational value at this time. Don't overlook the further economy in reducer. Corallac may be thinned nearly half and half *with alcohol* for spray application.

But economy is not the whole story. Corallac is a *quality* sealer for use under any finish. Equally suitable under lacquer and varnish of any type, especially the popular new synthetics.

Don't put off trying this high quality, money-saving sealer. Order five gallons prepaid at the barrel price for trial.

JAMES B. DAY & CO.
CHICAGO

the film as the last portion of the solvents escape. Some thinners on the market have this fault to more or less extent, but only in extreme cases does it cause clearly visible pinholes or blisters. My first recommendation is to try a good grade of slow thinner.

If the use of a proven high-grade thinner does not solve your difficulty the remaining course is to check the entire finishing operation. Check the cleaning. Determine to your satisfaction that the primer, surfacer, sealer and lacquers are not defective or of shoddy character. Special scouting should be given the surfacer. Does the sealer require thinning? The writer has found that the ones thinned out ready for use are generally more foolproof.

Finally, check the air line for clean air. Some "air cleaners" have a poor rate of efficiency. To be sure, they may catch most of the water and oil in the line, but it requires very little escaping past the cleaner to spoil the finish. A simple test is to pull the trigger back just enough to open the air valve, hold the gun against a piece of clean cloth and look for a trace of oil and moisture. Also, take the air cap off the gun and examine the air vents for signs of oil.

To sum it up, your troubles may come from any one of three sources, namely, defective thinner, defective paints (that is, the lacquers having an improper solvent composition) or an unclean air line, the last named being the least probable cause of your trouble.—JAMES A. BEDE.

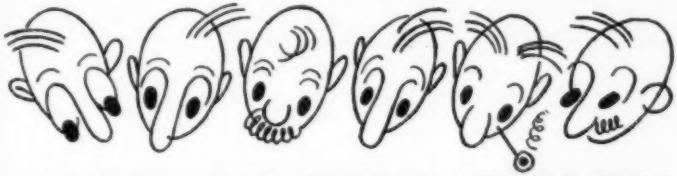
You do not say whether, at the time the blisters appear, if they just happen where the machine is filled or whether it is in general. In case of blisters I presume that they appear only on the filled surfaces and can be cured by knifing the filler on by putting on several thin coats of filler—and be sure to allow plenty of time for drying. Of course, the filler is sanded in between coats. I take it that the depressions to be filled are rather deep and you have been piling the filler on and not giving it sufficient time to dry. Pyroxylin filler naturally dries from oxidation, and the top surface appears dry and hard while underneath it is still wet. Then when your lacquer is applied and dries, the bottom of your filler also dries and forces air to come to the surface, causing blisters.

The best way to eliminate these blisters would be to use a baking filler, provided you have ovens. In case of pinholes I suggest you examine your iron and steel closely, as this trouble is sometimes caused by pinholes being in the steel itself. However, if this is not the cause of it, I would recommend a better grade of lacquer thinner. If pinholes still appear ask your paint salesman to furnish you with a combination primer and surfacer which should take care of your troubles. This type of material will also take care of your trouble if your steel is the cause of pinholes. I believe you will find the primer surfacer will also seal your filler, allowing you to eliminate your sealer operation.—M. FORCHIONE.

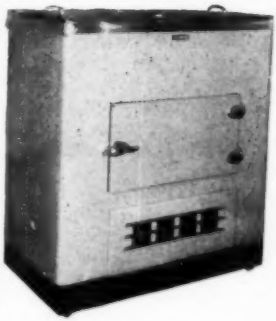
To Patch Wrinkle Finish

I am seeking some information about how a wrinkle finish can be successfully patched.—D. F. C.

If the problem is to patch a



LOOK AT THE FINISH

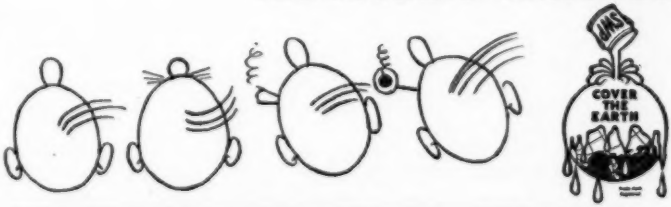


YOUR CUSTOMERS DO!*

*** That's what the Portable Elevator Mfg. Co. of Bloomington, Ill., said before introducing the amazing new Pelco Electric beverage and food cooler—and they decided on S-W KEM ENAMEL as the one finish that would retain its exceptional beauty and lustre despite temperature extremes and abuse in service.**

The result — fine appearance plus the many exclusive features of this efficient "floating iceberg" cooler have made it the world's fastest seller. It's a success story with a grand "finish," and only one of many different products whose sales success is attributed in part to the lasting beauty and protection of an S-W "engineered" finish. Write us concerning your problems. No obligation. The Sherwin-Williams Co., Cleveland, Ohio and all principal cities.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES



small area, such as a spot that was chipped off in handling, it can be done, but if it is desired to patch up an area that turned out shiny or a sag that is sanded out, I know of no successful method that will not show up as a patch. This is due to the fact that where the spray tapers off, the film is not heavy enough to wrinkle, hence the shiny area is still present.

The way to repair a chipped spot is to brush it with a small touch-up brush, being careful to confine the operation to the bare spot, and then bake the unit again.—JAMES A. BEDE.

I presume you want a quick, easy and undetectable repair. With wrinkle paints the best method is, "avoid the mar." The extra effort, tension, alertness and supervision expended to minimize the rejects, even though that extra care costs money, is probably cheaper than the do-overs that are thus avoided.

But let's suppose that here's one that happened in spite of all. The first inclination is to re-spray the whole piece, but the two coats of wrinkle interfere with each other, with a resulting effect that is un-pretty. And it doesn't match. Hence wrinkle over wrinkle is "nix."

Second bright idea: If the bald spot is small, let's daub it with some of the same wrinkle paint and stick it into the oven again. It should be easy with a suitable brush and some skill. Perhaps it is. I've seen it tried several times.

If the mar is just a small scratch, try an extra thick brushing lacquer (like Rip-Pl-Mend) applying it with a small, firm pointed brush. But if denuded area is large or prominently located, strip off all the old wrinkle and do it over.—C. L. NAGEL.

To Stop Pinholes in Mahogany

In July 1937 issue, pages 38 and 43, respectively, a remedy for pin-holes in finishing Philippine mahogany is requested by B. G. O. of Chicago, Ill.

I have made a study to overcome pinholes in finishing large tops of Philippine mahogany and will explain in detail the cause of pinholes in Philippine mahogany so that people engaged in this class of work may benefit from this research.

Philippine mahogany is regarded as a difficult wood to finish but, if the cause of this difficulty is removed, it will finish as easy as maple or cottonwood.

Philippine mahogany grows in a damp country and is very susceptible to water. The pores are large and filled with a starchy hygroscopic matter that swells quickly and will dry out thoroughly only at 70° to 100°F. and 15% to 20% relative humidity. A low humidity is the only effective remedy in overcoming pinholes. (Humidity can be regulated by dry heat.) High humidity and high heat always cause pinholes in woods where the pores are large.

The hygroscopic matter in the grain of the wood swells in damp weather and closes the pores tightly when the hydrometer registers more than 20. Water-stain, alcohol in shellac, etc., also help to swell the grain to a great extent.

TEMPERATURE - HUMIDITY

In early July, when the temperature and humidity were in the "nineties," and Spotting Out a problem

1617

Reg. U. S. Pat. Off.

CLEAR METAL LACQUER

was in greater demand than ever. The spotting out of finishes on cast metals and the crystal spotting of oxidized finishes, will be greatly reduced and possibly eliminated by the use of *1617*—the Original Non-Spotting Lacquer, developed in 1927.

TRY 1617 THIS SUMMER

It is crystal clear.
Hard and durable.
Has excellent adhesion.
Does not turn green upon exposure.

THE STANLEY CHEMICAL CO.

EAST BERLIN, CONN.

LACQUERS - SYNTHETICS - ENAMELS - JAPANS

A Subsidiary of THE STANLEY WORKS, NEW BRITAIN, CONN.

Under such conditions, although the wood appears perfectly smooth before or after filling (even when examined under a magnifying glass) the cause creating pinholes will not be affected until the first coat of varnish has been applied and dried. The chemical dryer in varnish coagulates the hygroscopic matter in the grain of the wood; the pores contract and pinholes result. The facts stated in this paragraph can be verified in the following manner: Remove the varnish with varnish remover, then refill and revarnish. Pinholes will not reappear.

Taking into consideration the facts outlined in the previous paragraphs, I have proved to many prominent factories who use Philippine mahogany extensively that when this wood is treated with a chemical solution in the sanding department after rough-sanding, then dried thoroughly overnight and polished with No. 6/0 sandpaper, pinholes will not develop in the finishing department.

This chemical solution coagulates the matter in the pores of the wood and, when the board is exposed to high humidity or when water stain is applied, the grain cannot swell and close the pores. The surface so treated requires very little sanding after water-staining. Filler is also able to enter the pores and thus prevent pinholes.

An effective chemical solution that is capable of coagulating the hygroscopic matter in the pores of Philippine mahogany, and which is generally used by furniture factories, is available .... by writing the author.—Frank V. Tischer (The Liquafill Mfg. Co.).

Chrome Stripes Decorative

The American Nickeloid Co., Peru, Ill., is featuring a decorative product that will interest many manufacturers of both metal and wood articles. It consists of pre-finished chrome-steel round-edge flat wire in various sizes. A typical sample is less than 1/16-in. thick and a little more than ⅛-in. wide, but other sizes are available. These strips can be used as decorative inlays, overlays, or as structural members. They are smooth and brightly polished.

Neville Co. Appoints New York Sales Representatives

A letter from The Neville Co. (Coal-Tar Products) Pittsburgh, Pa., states that:

"We are pleased to announce that effective July 1, Calo & Lydon, 90 West St., New York, N. Y., have been appointed as our sales representatives in the metropolitan New York district.

"Better service and closer contact with the consuming trades will be insured by this connection with Calo & Lydon because of their many years of experience and reputation for unexcelled service."

Particle Size Analyzer

Analysis of particle size distribution of fine dry powdered materials is now successfully accomplished by the Roller Particle Size Analyzer introduced by the American Instrument Co., of Silver Spring, Md.

Any number of size fractions may be obtained, with size limits as close as desired, the smallest fraction conveniently secured being 0 to 5 or 0 to 3 microns, depending on the density of the material.

Percentage weight of different fractions is duplicable to 0.5%.

This analyzer is applicable to most dry powdered materials finer than approximately 200 mesh, and of size greater than colloidal. Among the materials successfully dealt with are cement, gypsum, magnetite, flint, feldspar, diatomite, metal powders, organic dyes, salt, talc, mica, carbon, pigments, china clay, mineral fillers, etc.

While a series of fractions may be obtained to give complete distribution, a 0 to 5 micron or a 0 to 3 micron separation in itself furnishes a convenient and rapid check on mill operation and standard of quality.

SURFACERS

PORES NEED FILLING for smooth - textured attractive finishes. Presdwood, celotex, natural woods, rough metals and porous compositions need quick-drying, easy-sanding, high-bodied surfacers—in short, our CEL-U-LAK Surfacers.

These have unusually high body, coupled with low viscosity, permitting a heavy application by spray; air dry to sand in 1½ hours, force dry at 125° for 20 minutes. They are ground finely and have phenomenal adhesion and resistance to moisture.

CEL - U - LAK Surfacers are standard in white, ivory, dark grey and red. They have for 6 years been an outstanding successful item in our line. We suggest you examine it for your requirements.

The
VARNISH PRODUCTS CO.
CLEVELAND, OHIO

3 WAYS TO PRODUCE BETTER MASKING JOBS

•

PERMACEL
THE PAPER MASKING TAPE

JONFLEX
FINE CLOTH MASKING TAPE

INDUSTRIAL
COARSE CLOTH MASKING TAPE

Send for sample rolls.

THE REVOLITE CORP.
REG. U.S. PAT. OFF.
NEW BRUNSWICK • NEW JERSEY

Binks Offers New Adapter for Paint Cans

The Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., has brought out a standard paint-can adapter that makes it possible to use the original paint can as a spray-gun cup. The operator can change from color to color quickly and save the trouble of washing the cup each time. The use of this adapter makes it possible to have a separate plainly-marked can for all colors, primers, surfacers, etc.

The new L-367 adapter fits most standard paint cans. It is simply placed on the top of the can, the handy lever clamps on the inside of the adapter are tightened and the new "cup" is ready to fit into the yoke of the Binks or other standard spray gun attachments. The adapter can be readily removed from can to can as desired.

Referring to the accompanying illustration, "1" indicates tightening clamps; both clamps should be engaged partially and then tightened. No. 2 shows the Thiokol gasket for seal-tight fit. No. 3 shows one of the ears on adapter to fit into openings on yoke of standard spray-gun attachments.

How it's attached to ordinary paint can.

What's New...

Burn-Proof Lacquer

"Durtemp," a new baking lacquer developed by Maas & Waldstein Co., makers of industrial finishes, Newark, N. J., withstands the action of match flames, lighted cigars and cigarettes, and perfumes, alcohol, and household chemicals. Durtemp is a gold-colored clear lacquer, which is applied to metals by dipping or spraying and is then baked. It is being used for finishing ash trays, but is also useful for serving trays, vanity cases, and other products requiring protection from lighted cigarettes, spilled perfumes, and other things that are injurious to ordinary finishes.

Electric Flask Heater

Two models of small electric flask heaters (one with one 3-heat switch and one with two 3-heat switches) are being offered by the Harold E. Trent Co., 620 N. 54th St., Philadelphia, Pa. These heaters (they look like electric glue pots) are designed especially for laboratory service.

Advantages claimed for these flask heaters are that they have little retained heat. There is practically no thermal insulation. The heating element is suspended on the side of the pot and covered with a sheet metal casing. The result is that the tem-

AN EXCELLENT GENERAL SOLVENT

Economical and Convenient to Use

SOLOX
U.S.I. PROPRIETARY SOLVENT

Solox dissolves all spirit soluble gums for Shellacs, Shellac Substitutes and for Spirit Varnishes

U. S. INDUSTRIAL ALCOHOL CO.

60 EAST 42nd STREET
Branches and Warehouses in All Principal Cities

USI

NEW YORK, N. Y.
World's Largest Producer of Alcohol Solvents

SILK SCREEN METHODS of REPRODUCTION

Fully Illustrated by the Author. Leatherette Binding. Size 5x7½ in. 193 Pages. 98 Illus...... **$3.00**

THIS new book is intended for Sign Painters, Card Writers, Display Men, Furniture Manufacturers, Novelty Manufacturers, Glass Etchers and For Domestic Use.

Every detail of the silk screen process is presented clearly in detail. All equipment is fully described and its use illustrated. All materials needed in the various kinds of silk screen work are mentioned with respect to their use to advantage. Estimates of costs and prices to charge are given.

Practical Publications, Inc.
222 East Ohio Street Indianapolis, Ind.

perature is built up rapidly and the changes are made rapidly.

The inside casing is thin material and the bottom is solidly welded in so that should the flask break, its contents will not run into the heater itself. These flask heaters are suitable for maximum temperatures of 750°F.

Measures Paint Film Thickness

The Bathytrol, announced by the Electronic Control Corp., is an electronic paint film thickness measuring guage that is accurate to .0001 of an inch.

Through an especially developed circuit, the Bathytrol detects the infinitesimal current caused by the slightest contact of a needle-sharp stylus as it touches the metal underneath the paint surface that is being measured. A vacuum tube passes enough current to actuate a relay which operates the indicating lamp installed in the instrument. Through this use of electronic principles the Bathytrol eliminates the uncertain accuracy of earlier efforts in this line.

A direct reading dial head is being developed as an accessory for the Bathytrol, allowing the reading to be taken without removing the instrument from the surface of the paint and materially speeding up the process. The dial reading head will simplify the operation of the Bathytrol and make it possible to secure accurate results in a shorter period of time.

For actual operation the Bathytrol

Measures Thickness of Paint Films.

WIDE WET SPRAY

Milburn Paint spray guns deliver a wide wet spray which speeds the job and produces a better finish.

Write for new catalog.

Alexander Milburn Co.

1402 W. Baltimore Street
Baltimore, Maryland

Pyroxylin Lacquers — Synthetic Enamels — Insulating Varnishes—Baking Enamels

IMPERVIOUS PRODUCTS
FOR INDUSTRIAL USE
IMPERVIOUS VARNISH COMPANY
KOPPERS BUILDING, PITTSBURGH, PA.

Protective Coatings — Finishing Varnishes—Primers and Surfacers

IMPERVIOUS NO PRODUCTS

is connected to any 110-volt 60-cycle lighting line. After an absolute zero has been determined on a smooth surface test plate, a wire is clipped to the bare metal under the paint surface to be measured and the hand unit is rocked firmly over the paint surface while the micrometer screw is turned down slightly with each rocking. This is continued until the penetrating stylus completes a contact, lighting the pilot lamp; the reading is then taken. With the dial reading head, the face of the dial is set correctly at zero, the head is then rocked over the paint surface with one hand while the knurled cap is turned down with the other until the pilot lamp lights, the reading being obtainable immediately. The base of the dial head is shaped in such a way that the ordinary irregularities of industrial painted surfaces affect the accuracy of the reading very little. The dial mechanism is of the jeweled, precision type calibrated in .0001 of an inch.

Tests have been made on various painted surfaces and the results have proven the accuracy as well as the simplicity of operation of this instrument. For all practical purposes the operation in no way damages the paint or metal surfaces.

This instrument offers the further advantages of measuring accurately on curved as well as flat surfaces and paint films applied to any metal object regardless of whether the metal has magnetic properties or not.

Buffing Lacquer

In a product summary on Flexible Buffing Lacquer No. 950, the Roxalin Flexible Lacquer Co., Inc., Elizabeth, N. J., calls attention to the chief characteristics of this clear cellulose-type air-drying flexible lacquer. It is a permanent water-white material that resists discoloration by sunlight; doesn't change or deepen the color of the underlying enamel. Buffs to a deep high luster; does not chip, flake or peel; has permanent flexibility and adhesion.

SAYLOR-BEALL SPRAY GUN
—the only spray gun with air-saving baffle plane nozzle. Write for details.
SAYLOR-BEALL MANUFACTURING CO.
1504 E. Philadelphia Ave., Detriot, Mich.

You Should Have a Copy of This Helpful Book

A detailed study of modern methods of automobile painting; carefully written in non-technical terms.

This book contains much useful information, both for the shop owner and finisher; explaining methods of preventing; checking and cracking, waterspotting, peeling, chipping, flaking and many other helpful ideas.

ILLUSTRATED—GOOD BINDING
16 CHAPTERS.....PRICE $3.00

Remittance with order, please

INDUSTRIAL FINISHING
222 E. Ohio St., Indianapolis, Ind.

A NEW INDUSTRIAL ALUMINUM PAINT

A quick air-drying (or bake) ready-mixed Aluminum Paint for production work on metal.

Easily sprayed . . . ideal for dipping . . . its smooth lustrous mirror-like finish is providing users with an easily applied finish that imitates a chrome electro plate job.

This product is finding wide use in the electrical goods, display signs, lamps, reflectors, novelties, toys and metal stamping industries.

Improve Your Product at a Saving—Write Today for Sample.

The Mitchell-Mayer Company, Inc.

ST. LOUIS, MO.

McALEER'S Polishing Compounds

are made at

'Buffing Headquarters'

A PRODUCT FOR EVERY PROBLEM

Samples on Request

McALEER MANUFACTURING CO.

2431 Scotten Ave., Detroit, Mich.

Abrasion Tester

The Taber Instrument Co., North Tonawanda, N. Y., announces the Taber Abraser, a precision testing machine for measuring the wear resistance, toughness, adhesion and rub-off qualities of surface finishes such as enamels, electroplate, anodizing, linoleum, moulded plastic sheets, and leather coverings.

In the research laboratory, the Taber Abraser is indispensable for testing new formulas, control work,

For testing wear-resistance of finishes.

checking competitive samples, grading, etc. Its lightness and portability makes it possible for traveling sales technicians to prove their claims and to check competitive materials on location.

Concerns manufacturing products that require a tough, wear-resisting finish are finding the abraser renders important service in determining the type of enamel, number of coats, or thickness of finish necessary to meet use requirements.

In general, the abraser is adaptable for testing practically every type of enamel, lacquer, or other non-tacky coatings including electroplated and anodic finishes. Tests to deter-

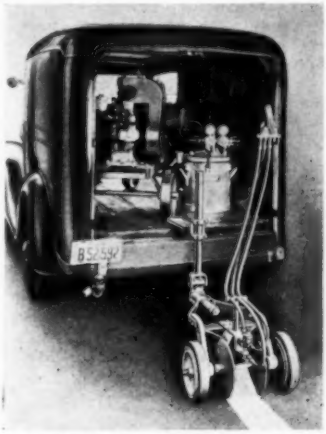
mine the comparative cutting efficiency of abrasive paper and cloth can also be made.

Road Striper

The Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., announces a road striping spray outfit which is illustrated in the accompanying cut. The striping mechanism, mounted between a pair of small rubber-tired wheels can be placed at the rear or along side the running board of a truck.

A Binks No. 10 automatic spray gun is placed between two metal discs which serve as side shields to limit the width of the stripe. The space between these discs is adjustable from 4 to 6-in. in width. The spray gun is also adjustable and removable. Self-adjusting scrapers keep the discs free from paint. Control of the spray gun is managed by a hand-operated valve convenient to the operator.

Up inside the truck there is a compressor outfit and material pressure tank with all accessories required for doing spray work.



Applies stripe by shielded spray.

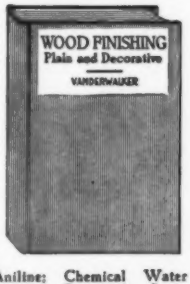
"MAGIC" TACK RAGS
IMPROVE YOUR FINISH 100%

MAGIC TACK RAGS remove specks, lint and sand particles— bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry— are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

Wm. A. Juergens Co.
4036-40 Lagrange Street,
Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.

WOOD FINISHING

A Book of Formulas and Detailed Instruction in Method, Tools and Materials. Period Finishes. Staining, Filling, Varnish, Painting, Enameling, Glazing, Lacquers.



WOOD Finishing in General; Preparation of New and Old Surfaces; Stains in General; Factory Prepared Stains; Water Stains; Aniline; Chemical Water Stains; Color Pigment; Dyewood; Spirit Stains; Oil Stains; Stain Mixing. Brushing and Procedure; Wood Fillers; Varnish and Shellac; Varnishing. Rubbing. Polishing; Varnish Defects; Lacquers; Wax and Oil Rubbed Finishes; Trim; Working Operations; Woods; Brush Graining; Decorative Wood Finishes; Repairing Damaged Finishes.

360 Pages, Cloth **Price.....$2.00**

Practical Publications, Inc.
222 E. Ohio St. Indianapolis, Ind.

GLOBE BRONZE POWDERS

Are —

- RICH LOOKING
- FINEST GRADE
- ECONOMICAL TO USE

Nationally known as leaders in matching difficult shades and producing special finishes.

- GLOBE Gold and Aluminum Paste is specially formulated for lacquer.
- *Color card, samples and prices sent on request.*

B. F. Drakenfeld & Co.
Incorporated
Established 1869
45 Park Place, New York, N. Y.
330 N. Ashland Ave., Chicago, Ill.
Pacific Coast Agents
BRAUN CORPORATION, LTD.
Los Angeles, Calif.

"the balanced thinner"

SUNOCO SPIRITS is balanced in the essential qualities:

Uniform solvency.
Good wetting out properties.
No separation.
Lower costs.
Uniform high quality.

For full information write to Advertising Dept. S-4

SUN OIL CO., PHILADELPHIA PA.

SUNOCO *Spirits*

Fire Extinguisher Enamel

The North Bergen Varnish Corp., North Bergen, N. J., announces a red synthetic baking enamel which adheres readily to brass, steel, iron, tinplate and any of the metals used in the manufacture of fire extinguishers. It is specifically designed to resist the effects of the carbon-tetrachloride-base fire-extinguisher liquid with which fire extinguishers are filled. The material is made to bake at 200° to 250°F. in 20 minutes to one hour. One coat is usually sufficient to cover, although many manufacturers prefer to use two thin coats.

"Absolute Stain Solvent"

"Absolute Stain Solvent," a product recently announced by Woodfinishing Products Co., 44 Industrial St., New York, N. Y., is an anhydrous solvent used to obtain quick-drying, non-grain-raising, non-bleeding wood stains.

According to the manufacturer, this stain solvent will dissolve water-soluble anilines, and the resultant stain mixture will have all the excellent qualities of non-grain-raising and oil stains; the permanence, uniformity, penetrating, fast-to-light features of acid water-soluble anilines; and the quick-drying characteristics of spirit stains. Stain solutions made from "Absolute Stain Solvent" are clear and stay in uniform suspension. Excess dye material settles out and is readily separable. The clear stain may be used for tinting light-fast transparent lacquers or sealers when desired.

Blackboard Finish

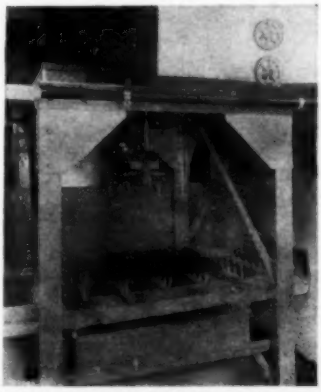
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J., announces the development of a new air-drying lacquer enamel that finishes wood,

fiber, wallboard, cardboard, pressed paper, and other materials with a surface resembling slate. This new finish, known as "Slatite," takes chalkmarks like slate, and the marks can readily be removed with an ordinary blackboard eraser, according to the manufacturer. The finish is washable and durable, and, when it becomes worn, it can be readily renewed by spraying on another coat of Slatite.

Slatite is being used for the production of toy blackboards and slates, and also for inexpensive light-weight and portable blackboards for the use of schools, colleges, lecture rooms, engineering and business offices, and stores.

Automatic Spraying

SOME interesting facts about the performance of an automatic spray outfit installed in an electric appliance company's porcelain enameling plant are of interest and value to any concern doing production spray work on panels, flat sheet stock or any large flat parts that can be moved



Sprays a uniform thickness coating automatically in down-draft spray booth.

GRAINING PLATES

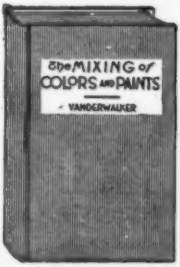
A wood grain finish places your product in the quality class.

●

AMERICAN ELECTROTYPE COMPANY

104 E. MASON STREET, MILWAUKEE, WIS.

GET THIS BOOK!



COLOR Formulas and Useful Color Cards. Description. Properties, Theory, Harmony and Management of Colors. Color Use and the Mixing of Colors and Paints for Interior Decorating, House Painting, Arts and Crafts. Furniture and Polychrome Finishing. Color and Light; Description of Color Pigments; Properties of Color Pigments; How Colors Are Prepared for the Trade; Basic Paint Pigments; Painting Oils; Volatile Thinners and Dryers; General Paint Mixing Methods; Color Theory, Principles and Use; Colored Paint Mixing Methods; Mixing Special Purpose Materials; Color Harmony and Management; Selecting Color Schemes; Printing Inks.

296 Pages, Fully Illustrated with Color Chart and Drawings, Cloth. Price..... **$2.00**

Practical Publications, Inc.
222 E. Ohio St. Indianapolis, Ind.

along under the automatic spray heads by conveyor.

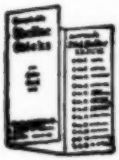
Studies show that this machine, partly shown in the accompanying illustration, gives an appreciable saving in labor, and because of the more uniform coat obtained, rejects are reduced. With the conveyor moving at a speed of 20-ft. per minute the machine applies a coating of 35 grams per square foot on miscellaneous flat pieces. The entire process is accurate, rapid and economical.

For the past year the company has been covering a large quantity of its ware with a "one-cover" coat. As this one cover coat is sprayed at 35 grams per square foot, an advantage readily can be seen, compared to the 20 grams per square foot for the first cover coat and another 18 to 20 grams per square foot for the final coat on "two-cover" ware. This makes a weight of 38 to 40 grams per square foot on two-cover coat ware as compared to only 35 grams per square foot on the coat sprayed by the automatic machine. The thinner enamel reduces chipping and other defects, and reduces enameling costs about one-third below those of two-coat ware.

The automatic spraying machine allows the company to get out a much larger output of the one-cover ware in one coat, while formerly, with hand spraying, only about half of the ware was finished in one coat. The machine also gives a much more uniform color, with fewer rejects.

Hand operators are required to spray edges of flanges and the backs of pieces which require spraying in order to prevent warping. On such work two operators are required in order to keep up with the speed of the machine—one spraying the backs of pieces and flanges on two sides, and the other spraying flanges on the other two sides. It is also necessary to have two operators to load and unload the conveyor.

The same principle can be



STICK SHELLAC

Better than anything else for repairing imperfections in wood, marble, etc. Made in 70 colors to match all finishes. Write for FREE Color Card and descriptive Booklet.

THE M. L. CAMPBELL COMPANY

704 East 19th Street
KANSAS CITY, MO.

Mall GRINDERS

SAVE TIME AND MONEY, AND STEP UP PRODUCTION

There is a model of MALL grinder with the appropriate attachment for every polishing and grinding application. Consult our Engineering Department who will gladly recommend the type of unit best suited for your work.

MALL TOOL COMPANY

7744 South Chicago Avenue Chicago, Illinois

Offices and Distributors in all Principal Cities

adapted to other spray problems and it is especially recommended where large flat objects are sprayed on a conveyor. Wallboards, linoleum, leather, imitation leather, range and refrigerator parts, paper, fabrics, blackboards, tile, glass, shingles and many other objects lend themselves readily to this type of spray coating. The automatic spraying assembly consists of a moving sprayer head which has four spray nozzles of the type used on ordinary hand spray guns, adjusted to give a flat fan-shaped spray. In operation, the entire spraying assembly moves back and forth at a regulated rate of speed across the conveyor carrying the ware to be sprayed.

The spray is automatically shut off each time it crosses the ware, as soon as it reaches the edge, and is automatically turned on again as soon as it reaches the edge again on the return trip. The points at which the spray is turned off and on, may be adjusted for various widths of ware. This operation, imitating hand spraying, saves material and prevents piling up of enamel on the nose of the gun, which may cause spitting.

Up-Keep Painting

HAVING BEEN a reader of INDUSTRIAL FINISHING for the last five years I am sending this article for your approval. I have worked from the ground up with the firm which I refer to in this article and have seen several men layed off for a short time due to poor workmanship and not following instructions, therefore I believe "Good Workmanship"

FLOCKS

Wool - Cotton - Rayon

- In All Colors
- For All Equipment
- For Every Purpose

SUITABLE FOR:

Rubberized Fabrics—Flock Printing — Velour Paper — Moulded Plastics — Spray Gun Equipment (For Woods, Metals, Paper and Glass)

Let us help you develop or reproduce that special effect or color tone. Send us sample or description of what you need.

MYERS - LIPMAN
Wool Stock Co., Inc.
283-287 W. Broadway, New York
Pioneer Manufacturers Since 1875

Furniture Finishing

A thoroughly practical book in five parts.
I. Period Furniture and modern styles.
II. Furniture Decoration (Antique Shading, Glazing, etc.)
III. Furniture Finishing (Woods, Finishing Room Tools, Equipment, Materials, etc.)
IV. Furniture Patching.
V. Special Processes (Lamp Shades and Bases, Picture Frames, Japanning, Mirror Resilvering, etc.)

543 Pages—Fully Illustrated
Good Binding—Price $3.00

Remittance with order

INDUSTRIAL FINISHING
222 E. Ohio St. Indianapolis, Ind.

The new Crown No. 20 Gun is the first spray gun to give full AT THE GUN control! New "Uni-Flo" Spray Head gives finer atomization, greater speed. Spray width adjustment in combination with pressure control ON THE GUN! One piece Fluid Needle Valve assembly instantly removable. Rugged, yet simple in construction; light weight; accurately balanced to eliminate fatigue. Write today for full details.

CROWN SPRAY GUN MFG. COMPANY

Warehouses in Principal Cities

1218 VENICE BLVD., LOS ANGELES, CAL.

To improve metal products

—see H. R. Simonds' new book

FINISHING METAL PRODUCTS

337 pages, 6x9, illustrated, $3.50

BESIDES fully describing modern shop technique, this book coordinates metal finishing processes and finishing problems with the over-all problem of manufacture. The usual types of finish, such as galvanizing, polishing, plating, lacquering, and painting are thoroughly treated, as well as many new finishes of a specialized nature. An important feature of the book is the section on cleaning and descaling. Throughout, both technical and commercial aspects are considered in detail in an endeavor to point the way to more attractive metal finishes and to more efficient means of producing them.

Practical Publications, Inc.

223 E. Ohio St., Indianapolis, Ind.

should be more widely discussed.

The procedure outlined may not be practical in all lines of work, but I believe it is the best for industrial plants. I have reviewed all past issues of INDUSTRIAL FINISHING back to 1927, which we have in our library in book form. —THE AUTHOR.

* * *

To maintain a highly efficient paint-shop personnel, we all know that each type of work, such as cleaning (referring to "hy-pressure" cleaning), hand painting and spray painting, should be more or less specialized for best results. If a machine of any type is involved, each man (for example, in a crew of 50) cannot be efficient in operating it in short notice. Therefore, we can readily see the need for special crews and good workmanship.

In our crew of 50 painters we have three foremen, six window washers, three glaziers, 28 brush men (first class, second class and apprentice), and ten spray painters. With this crew we do all types of painting for a firm that employs 4,300 people.

On small jobs, such as small die castings, etc., each man handles the job to completion, but on large greasy and rusty areas the work is handled in the following manner: The "hy-pressure" machine is used to remove all grease and dirt. (These men do not remove rust and blue scale due to poor efficiency in machine operation.) Then the brush crew is moved to the job. They remove all rust and scale and do the necessary spot priming (the surface is sandblasted if necessary) after which the spray crew is responsible for all succeeding coats.

One can readily see that if the

cleaning operation is not done properly it will effect the prime coat, and if the prime coat is not up to standard the spray operation will be useless.

Spray painters seldom prepare surfaces for painting, therefore they escape any serious criticism from the foreman; but they should refuse to put on the finish coats until the surface is properly prepared. This method tends to load the grief back on the other fellow, but after it is done a few times it will eliminate practically all "re-operations" resulting from faulty workmanship. — SCOTT B. SUPINGER.

Dull Rubbed Varnish Finish on Furniture

THE PERFECT dull-rubbed finish for furniture and cabinets adds wonderfully to the clear fine beauty of the color and grain markings of the wood under it. It seems certain that this beautiful finish will continue to grow in favor for all fine work.

Unfortunately some so-called "dull rubbed" work shows the heavy varnish coats as a muddy, lifeless, almost opaque surface, which robs instead of adding to the beauty of the wood.

The methods required to secure the old style high-polish finish are not suitable when the dull-rubbed finish is desired; nor can the same varnishes be used successfully.

Some manufacturers of fine furniture, wishing to produce the dull-rubbed finish, have assumed that the old methods and materials were suitable and have simply given the thickly varnish-coated surface a second rubbing with fine pumice and oil. Their

Practical Japanning and Enameling

HERE is the first authoritative handbook of its kind, containing much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of metal finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance . . . 22 chapters.

Price $3.50 . . . . *money refunded if book is not satisfactory*

Practical Publications, Inc.

222 EAST OHIO ST.

INDIANAPOLIS, INDIANA

Old WORLD Mahogany

A NEW, rich and beautiful finish for mahogany that may also be used on birch.

Many of the suites being shown at the current markets are finished in this beautiful mahogany shade. The system for finishing requires these products: "S. Q." Filler — "S. Q." Toner—"S. Q." Glaze—final coat either lacquer or varnish.

The new "S. Q." Glazes work evenly—do not settle and are made in luxuriant shades to give the correct color and tone desired in the final finish.

Write for complete information regarding this New Finish.

SPRUANCE QUALITY

Specialists in the manufacture of wood and metal Finishing Products, since 1907.

The Gilbert Spruance Co.
RICHMOND & TIOGA STS.
PHILADELPHIA, PA.

understanding of a dull-rubbed finish is a thick heavy varnish coating scratched sufficiently to leave it dull. In fact it is very dull, but that is about all that can be said for it.

The proper method of producing the new transparent finish may be summarized as follows:

1) Prepare the wood with special care, securing a smooth surface free from all unevenness.

2) Apply a coat of oil or water stain.

3) Apply a coat of paste filler, cleaning off all excess filler from the surface. A second coat of thin filler may be applied to insure a better surface.

4) Apply a coat of shellac or shellac substitute, by brush or spray, and sand by hand when dry.

5) Apply the first coat of varnish, either by brush or spray. This varnish should not be the old heavy-bodied type, but lighter in body and more transparent. Allow the coating to dry thoroughly. Some plants sand this coat by hand; others omit the sanding.

6) Apply the second coat of the same light-bodied varnish by the same method as first coat. If this is the final coat, rough rub by hand or machine with pumice and water; then give a second rub with pumice and oil, and the job is complete.

7) If a third coat of varnish is used, many concerns do not sand either of the first two coats.

The finish produced by this method is a joy to look at. It is rich and deep, but to the casual glance almost invisible, because of its perfect transparency. The color and markings of the wood glow through such a finish with added beauty.—C. F. SCRIBNER.

Industrial FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment

Published the 18th of each month by PRACTICAL PUBLICATIONS, Inc.
222 East Ohio St., Indianapolis, Ind.
Telephone .....Riley 6771

•

President.....A. T. Gaumer
Vice-Pres. and Editor.....W. H. Rohr
Treasurer and Adv.-Mgr.....E. A. Dosch
Secretary.....R. E. Suits

•

Subscription Rates Per Year
U. S. and Possessions.....$2.00
Canada and Foreign Countries.....$3.00

EDITORIAL

Details Are Important in Applying Fine Finishes

In the finishing of jewelry, lighting fixtures and other small appliances we learn, through shaping up some practical men's articles on these subjects, that such details as cleaning and conditioning the polished metal, handling the objects being cleaned and finished, masking areas to be left uncoated, and the final polishing are tremendously important. We are impressed with the excellent equipment that is provided and used for performing this type of work thoroughly and rapidly.

As a result of using these splendid facilities for taking care of these details in the work, the colored lacquer enamel can be sprayed directly on to the bare metal to produce smooth attractive durable coating. Priming coats are dispensed with. Masking tape isn't used, and there is practically no touch-up or patch work to do afterward—and no rejects; and the cost of the coatings applied amounts to only a few cents per item.

Some interesting lessons are to be learned from what is accomplished in the finishing departments that handle this class of work. Experienced men and foremen in these departments do not need to be harped at about the importance of clean surfaces, the need of suitable trays and hooks for handling work in process, the necessity of accurately-made close-fitting stencils and masks, and the value of high quality finishing materials and spray equipment. These and many other details, plus careful and skillful workmanship all along the line, must be part of the regular routine where high-quality finishing is performed.

Look After Those Small Sources of Waste

Sometimes a manufacturer makes large investments of space, equipment, materials and men in a bold major stroke to provide production facilities that will really bring about greater economies in finishing costs. Then, after sev-

eral months of operations he finds results are disappointing. Costs are creeping up again. Why?

In many cases it's because of lack of uptodate finishing room management. Numerous small leaks and sources of waste exist, but they can only be found and remedied by a very alert well-paid foreman or superintendent. To enumerate all of them would require a small book.

Spray guns improperly adjusted, incorrectly used, or used when parts are badly worn, are a source of material wastage, but this can only be discovered by an expert spray man. And so it is with many other things. Wiping rags, sandpaper and thinner are often used wastefully. Unclean compressed air, unclean hose and unclean drying air cause troubles that are costly. Changes in materials and laxness in observing a systematic method of ordering, stocking, testing and requisiting materials offer tremendous possibilities for wastage.

Constant vigilance is the price of real economy in the operation of any finishing department. These matters can only be looked after by an alert well-informed man who is on the job and in close touch with the work continuously. Unless the finishing foreman is forever eager to make improvements in his department, he is almost sure to become more or less indifferent in time; and indifference breeds carelessness which, in turn, results in costly wastefulness. Keep the foreman interested and encouraged by allowing small expenditures from time to time for needed repairs, replacements and improvements that he suggests or recommends. It is a mistake for the management to think that one major expenditure in equipment will solve all problems for all time to come.

New Furniture Is Better Designed and Finished

A notable trend in all manufactured products is better designs, improved workmanship and more attractive more durable finishes. This fact is called to our attention more forcibly when we see what is shown at the regular and special exhibitions of various products. For example, a report on the July furniture shows at Grand Rapids and Chicago reveals the following specific observations:

The current markets emphasize the trend to finer designing and smarter styling, but reveal no marked fashion shifts in either styles or cabinet woods. As compared with the January 1937 exhibitions, Modern has declined, while the French styles, both Court and Provincial, have risen. The 18th Century English styles as a group have fallen by one point, and both Early American and American Colonial and Federal have advanced by about one point. Among the woods, walnut, mahogany, maple and a few other species have advanced over the January showing.

Victorian, in forms which emphasize the simpler and more livable aspects of that style, is a little more conspicuous this season than last, and Queen Anne is rising, particularly in the high-fashion lines. Among the season's novelties are the new Mexican Modern, based on motives drawn from the art of Mexico and our own Southwest. Here we find

solid walnut Modern suites in blond and open-pore finishes, and many clever designs in which the spirit of the historic styles has been expressed in simple and inexpensive forms adapted to present-day homes and ways of life.

Percentage figures, based upon a physical count of all bedroom and dining suites exhibited, are as follows:

By Styles	Percent
Modern	30.5
Early English	4.0
18th Century English	28.8
Queen Anne 1.2	
Ea. Georgian & Chippendale 9.1	
Late 18th Century English 18.5	
French	12.0
Provincial 2.3	
Court, Direct. & Empire 9.7	
Early American	7.6
American Colonial & Federal	9.8
Italian	.4
Victorian	.5
Misc.: Biedermeier, Spanish, Swedish Peasant, etc.	.6
Unstyled	5.8
	100.0

More Men Like This Are Always Needed

Every industry has a few men who are progressive — men who are the somebodies among a lot of nobodies. What would we do without the somebodies among the tens of thousands of finishers and finishing executives? You couldn't make progress. For example, let's consider a typical somebody among present day finishers. In the few lines from a letter he writes the editor, you can quickly form a pretty good idea of what he's like—enough of an idea to respect and admire him. His letter starts as follows:

"Just a few lines to thank you for giving me this opportunity to help solve other people's painting problems. I derive a very keen delight in analyzing and solving the difficulties that occur in metal finishing. The problem you presented to me is a simple one, yet it is surprising how many finishers have encountered trouble with their ground coats. Often they solve them by a roundabout labor-wasting method. I will be glad to answer any more questions that come to you."

We need more men like this—men who know something worthwhile, but who are not selfish or conceited about it. Progressive men associate with and exchange ideas with other progressive men because the attraction is mutual. They know they will learn more and profit more by it. We must impart knowledge if we expect to receive information; we must spend money to earn money; we must give of what we have in order to be entitled to receive that which someone else has. It is a give-and-take proposition. The greater the service given, the greater are the rewards received.

Quick Facts About Modern Woods

Users and finishers of fine woods should have a copy of the new 32-page book (8½x11-in.) recently prepared and published by the Roddis Lumber and Veneer Co., Marshfield, Wisc. The title is "Characteristics of Modern Woods." The book includes information about domestic and foreign woods. All woods are listed alphabetically by trade names followed by the botanical names. Important facts about the color, figure and other characteristics of each wood are given. The last three pages of the book contain descriptions of veneer terms used in the trade.

Typical entry from the book: Faux Satine Crotch—Taxodium distichum. A trade name applying to cypress crotches—the wood comes from the formation between the trunk and buttressed roots. . . .

Letters from I. F. Readers

(Continued from page 11)

would also be glad to to have as full technical details as possible and the composition of each product.

It would aid our Australian operation considerably if you could provide us with a small sample can, no charge, of each lacquer or finish, stating the flash-point of the contents of each can.—H. N. P. Corp.

Degreasing Machine

We have been told about a machine or device used for degreasing metals that have been stamped so that previous to spraying color on the metal that has machine greases from the stampings, all that is necessary is to dip the greasy metal in the degreasing device, take it out dry and the parts are ready for spraying. Can you furnish the address of the manufacturer?—M. O. C. (Studios).

Information has been supplied.—Ed.

Walnut Graining

There is one article we are particularly interested in at the present time and that is in regards to walnut graining. Possibly you have something about walnut transfers which are made in sheets approximately 4-ft. square, and no doubt this method of transferring walnut on metal work is more economical than the graining process. You might also be able to enlighten us on the most recent and uptodate method of graining cabinets in walnut and mahogany finish.—N. R. Mfg. Co. (Office Specialists).

MASKALACO
A MASKING PASTE
Use in multicolor lacquering, painting, enameling, screen processing, etc. Striping and decorating more effective — less costly — with MASKALACO. Write for details and sample.
CLEAVELAND
LABORATORIES & MFG. CO., INC.
445 Wilson Ave., Newark, N. J.

Furniture Polish; Milk Spot Remover

What is the name of the manufacturer of the furniture polish mentioned on page 83 of INDUSTRIAL FINISHING, January 1937?

Is there any chemical or method by which I can remove hardened milk spots in baby cribs, which I sometimes get for refinishing. I've tried a few things but they seem to be unsatisfactory.—N. W. (Furniture Repaired & Refinished).

Repair Putty

Will you please refer us to a manufacturer of putty for use in the cabinet and finishing room in stain finishes on gumwood furniture? We use both oil and permanent stains and have been having difficulty in finding a putty that will take stain. —A. F. Co. (Bedroom Furniture, Novelties).

To Coat Cup Hooks

Under separate cover we are sending you a box of ¾-in. cup hooks, and would like to have you suggest the best process by which these can be enameled in colors; also the proper grade of enamel which would coat them not too thick or fill up the threads.—S. A. R. (Hardware Products).

Burn-Proof Finish

Please advise what lacquer or shellac to use on billiard-rail tops that would be heat-proof and also give a hard surface—one that would not leave a cigarette burn.—J. & G. Co. (Carom & Pocket Billiard Tables).

Acid-Resisting Black

Can you give us a formula for the acid-resisting black chemical finish usually seen on school laboratory tables, etc.?—S. O. V. Co. (Mfrs. of Metal and Wood Specialties).

Graining Equipment

In the July issue, page 7, we notice that someone has asked you for information on graining equipment.

We ourselves are working on a new product which so far we have planned to grain, if the proper materials can be found, and if it can be done at a reasonable cost.—H. D. U. Co. (Air Conditioning Apparatus, Unit Heaters, Unit Coolers).

Used Buffs

Where can we buy used buffs for polishing and buffing? We use only small ones, 6-in. to 8-in. outside diameter.—R. Metal Specialties Co.

We understand these used buffs can be purchased from the platers' supply companies in large cities.—Ed.

Air Drier and Filter

We would appreciate being advised the name of the manufacturer of the compressed-air drier and filter, as mentioned in the article appearing on page 29, February issue of INDUSTRIAL FINISHING.—H. School Supply Co.

This is a product of Ruemelin Mfg. Co., Milwaukee, Wis.—Ed.

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

CHEMIST WANTED

By varnish manufacturer. Must be experienced in matching, testing, and developing varnishes for the woodworking and metal industries, also on synthetic varnishes. State salary desired and furnish references. Address IF-672, care Industrial Finishing.

FOREMAN FINISHER

Wanted for modern conveyorized refrigerator finishing department. All baked, white, synthetic finishes used. Give history—age—salary—experience, etc. Address IF-670, care Industrial Finishing.

PLANT WANTED.

Desire to finance or purchase small lacquer plant operating at present time. Address IF-667, care Industrial Finishing.

You'll always get the best job with WALKER'S FURN-I-LAC

FURN-I-LAC is a new development of Walker's Finishes for furniture. It has excellent building qualities, and is used on the finer grades as well as on medium priced furniture, and on radio cabinets.

Walker's Wood Sealer No. 69

—for sealing pores of wood, and holding out finishing coats. No. 69 has been thoroughly tested and approved by leading manufacturers.

H. V. Walker Co.

Makers of Fine Finishes

ELIZABETH,

NEW JERSEY

CLIP THE COUPON AND SEND

H. V. WALKER CO., ELIZABETH, NEW JERSEY

Send samples and details of Finishes ☐

Send samples and details of No. 69 Wood Sealer ☐

Name.....

Address.....

VARNISH MANUFACTURER

Located in Philadelphia, requires experienced man to take charge of varnish factory. Must be experienced on varnishes for furniture, metal, and grinding trade, as well as the synthetic type varnishes. Prefer man with laboratory as well as practical experience. Good salary to start and good opportunity for the right man. Must furnish references from past employers as to character and ability. Address IF-669, care Industrial Finishing.

POSITION WANTED

By man with 15 years' experience as foreman in large furniture plants. Expert quality, production and matching colors. Now employed. Address IF-673, care Industrial Finishing.

DEMONSTRATOR-SALESMAN WANTED

Recognized, long established manufacturer of wood finishing materials has developed a revolutionary labor saving, time saving series of materials for finishing Maple.

The entire finish can be completed in one day. Only one slight sanding required. Blending, highlighting, and uniforming in one operation, without wiping.

Entire finish can be demonstrated within two hours.

We want an experienced man to demonstrate and sell these materials in the major furniture centers.

This is an unusual opportunity to earn real money on a commission basis.

Your reply must give complete history, references, etc., as only men of character and experience will be considered.

Replies will be held in strict confidence. Address IF-671, care Industrial Finishing.

SALESMAN WANTED.

Old established manufacturer of complete line of Lacquers, Synthetics, Varnishes and Oil Base Enamels, has opening Central Ohio for salesman who has following among companies who use above materials. Replies will be strictly confidential. Address IF-668, care Industrial Finishing.

JAPANNING OVENS FOR SALE.

One Gehnrich Indirect Heat gas oven and one Steiner Direct Heat. Reasonable. DOWER FINISHING & RESEARCH CO., 182 Pennsylvania ave., Newark, New Jersey.

Save from 30% to 60% on

Paint spray Equipment. Trade in your out-of-date spray guns, fans, booths, compressors, etc., on new or rebuilt equipment. As the largest dealer in rebuilt equipment we are able to offer liberal allowances on your old equipment. Every item guaranteed.

We have:

Air compressors (large and small).
Air and material hose and connections.
Spray guns (rebuilt) all standard makes.
Pressure tanks.
Spray booths and other specialties.

We have it and can save you money . . . write today.

H. & E. MANUFACTURING CO.
720 S. Meridian St., Indianapolis, Ind.
Est. 1913

Distributors of Binks entire line.

SAVE : SAVE : SAVE

New and used Paint Spray Equipment, Booths, Exhaust Units, Compressors and Air Rubbing Machines—(all equipment bears underwriter's label.)

Write for complete information now, or phone

GENERAL SUPPLY COMPANY

31 East Georgia St., No. 300
Indianapolis, Ind.
Phone, Lincoln 2553

626 Broadway
Cincinnati, Ohio
Phone, Cherry 2440

Distributors of Paasche Equipment